SAWS in the Filing Room

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The suggestions made in this book are the result of long practical experience in the manufacture, repair and care of Saws. You will find them of considerable interest and probable assistance to you in securing the best results from your Saws.

We issue special booklets covering the complete line of Atkins SILVER-STEEL SAWS, which we would be pleased to send you on request.

ATKINS MILL SAW BOOKLET treats of Mill Saws and illustrates and describes the complete line, such as Solid and Inserted Tooth Circulars, Bands, Edgers, Re-Saws, Concave, Shingle, Heading, Groovers, Gang, Mill, Veneer, Mitre, etc.

ATKINS METAL SAW BOOKLET shows the complete line of Saws for cutting metal of all kinds.

ATKINS CROSS-CUT SAW BOOKLET gives detailed information in regard to this most excellent department.

We have special books on Saw Tools, Lumbering Tools, Mandrels, Filing Room Outfits and Mill Supplies of all kinds, which we will furnish you free of charge upon application.

TERMS OF WARRANTY Each ATKINS SILVER-STEEL SAW is warranted as true as it is possible to make it, and free from flaws and seams. If found to be defective in any of these particulars, it may be returned and if, upon examination, the Saw is found to be at fault all necessary repairs will be made free of charge, or a new saw given in exchange, provided it is returned within thirty days after delivery.

Saws cracked or broken, as the result of filing square corners in the gullet, or from using a cold chisel or punch in retoothing, will not be replaced under our warranty. Any alterations in the holes of a Circular Saw by filing, reaming, or otherwise, will generally spring the Saw. When such alteration is made, the Saw will not be subject to above warranty.

The name of E. C. Atkins & Co. on a Saw is assurance to the buyer of its superior quality and reliability.

Yours truly,

E. C. Atkins & Co.

PRACTICAL SUGGESTIONS, STANDARD RULES, ETC., CONCERNING THE USE AND CARE OF CIRCULAR SAWS.

HANGING THE SAW.

Saws of our manufacture, unless they are ordered to be put up straight, are marked near the center with the words "LOG SIDE." Before placing the new saw upon the mandrel, be sure that the side so marked comes next to the log on your mill; if it does not, it should be sent to the factory to be hammered so as to suit your mill.

Be sure that the mandrel is level, and that the saw when placed on it and the flanges screwed up, is perfectly plumb. The holes in the saw should be an easy fit on the mandrel and lug pins.

Be sure that it does not bind on the mandrel or the pins. If it does, the least warmth of the mandrel will be sure to cause it to expand, bind and spring the saw.

It should slip on readily, neither tight nor loose.

Saws are often pronounced crooked when the fault is in the collars.

If the position or "dish" of the saw is changed in the least by tightening the collars for work, the defect should be remedied at once. Put a straight-edge on the log-side of the saw, and ascertain whether the fault is in the saw or in the collars.

Thin saws and saws of high speed, are put up very open so that the center will pull through, and the saw, when hung on the mandrel, may show concave or convex on the log side when standing still, but when run up to the speed for which it is hammered, it should straighten up and be flat, or nearly so, on the log side.

When hung upon the mandrel and the collars tightened, the saw should be perfectly round, so that every tooth will do its proper work. Should the saw be too crowning or too dishing on the log side, the difficulty may be overcome by papering between the saw and the collars. If the saw is

dished on the log side, cut a ring of paper of the size of the collar and about three-fourths inch wide; wet it with oil and lay it on the loose collar.

Cut a smaller ring of paper of the same width to fit the mandrel, and place it on the mandrel against the fast collar. If one thickness of paper is not sufficient, add another ring, and so on until the saw, when clamped between the flanges, is brought to the proper position.

Should the saw be too crowning on the log side, reverse the position of the paper rings, placing the large one next the fast collar and the smaller one next the loose collar. Letter paper for making the rings is preferable, being solid and firm.

LINING THE SAW WITH THE TRACK.

Take all the end play out of the mandrel. Run the carriage up past the saw so that one of the head-blocks will be opposite the center of the saw. Fasten a square piece of board on the head-block and let the end of the board touch the face of the saw at its center. Then run the carriage back from the front of the saw 20 feet. Draw a line from the end of the board past the saw parallel with the track. The line where it passes the center of the saw should be from one-eighth inch to one-fourth inch from the face of the saw. This would show the track at 20 feet from the center of the saw on a line with the saw, and that the track at the center of the saw, if put down right, is one-eighth inch to one-fourth inch further off from the saw than at 20 feet distant.

Some saws require more inclination toward the track than others, and the track being adjusted properly, any small variation required may be accomplished by means of the set screws on the box.

The track should be solid, level and perfectly straight, and the saw frame firmly anchored. Trouble is often caused by a neglect to keep the track in order, and it should be examined frequently.

LEAD.

We have shown that the lead of the saw to the log may be adjusted by its position to the track. It may be held to its work in the log by beveled filing on the back of the tooth. The teeth, if properly filed, should always be perfectly square on the front side, but if the saw tends to lead in or out of the log, it may be held to the proper position by beveling the back side of the tooth at the point. If the front of the tooth is filed perfectly square and the teeth are beveled on the back, on the broad side, this will lead your saw into the log, or, if you bevel on the log side, it will lead the saw out of the log.

Should the saw lead in and out, or what is called "snaky," it is evidence that it needs hammering, that the rim is too large for the center and the saw needs opening out at the center. Such a saw may be run warm at the center and the difficulty overcome in this way; otherwise it will require hammering.

POINTS TO BE OBSERVED.

See that the track is solid, level and straight, that saw shaft is level and the saw hangs plumb; that it goes on the mandrel easy, is a close fit, and that the lug pins have a bearing; that the tight collar is a little concave and the loose one perfectly flat; that the saw is straight on the log side when the collars are screwed up and the saw run up to the required speed; that it is in line with the carriage and a little inclined toward the log; that the saw is perfectly round and has throat-room sufficient for the dust; that the teeth are not too high on the back side; that the teeth are filed perfectly square on the front side, and swaged sufficient to give clearance for the body of the saw; that there is very little, if any, end play to the mandrel; that the guides are perfectly adjusted when the saw is standing still.

Do not try to lead the saw with the guide pins, but lead the saw by adjusting it properly to the track and by proper filing. If you wish the saw to run warm at the center, you can create friction by reducing the set or spread of the teeth.

If the saw heats too much in the center, give it a little more set. If the saw heats on the rim it is because the teeth have not sufficient throat-room for clearance of the dust, or the backs of the teeth are too high. If the saw is too tight on the rim increase the motion if possible, and be sure to keep it cool in the center.

The saw should be run at uniform speed both in and out of the cut.

If the guide pins are run too close, the saw will heat at the rim and run "snaky." If gum is allowed to collect on the sides of the saw, the rim will heat from the friction.

TRUING SAW ON THE MANDREL.

If the saw is in proper tension and does not run true, take all the end play out of the mandrel; rest a small piece of board with one end sharpened, upon the saw frame; hold the sharpened end against the board side of the saw near the rim. Mark with chalk the high places or those that touch, and on the opposite side the hollow places or those which do not touch the board. Turn the saw so as to bring the high points directly over the arbor, and, with a sharp pull bend the points which are high on the board side toward you, and with a sharp push bend the parts which are high on the log side from you. By testing and bending in this way you may make a saw run perfectly true on the mandrel which has been sprung or does not from any cause run true.

CAUSES FOR HEATING ON THE RIM.

Guide pins set too close.
Teeth have not enough spread or set.
Backs of teeth too high.
Not throat-room enough for saw dust.
Accumulation of gum on the teeth.
Saw not open enough in the body for the speed.

CAUSES OF HEATING AT CENTER.

Teeth have not enough spread or set.
Saw lined too much out of log.
Mandrel runs too warm.
Saw too open in the body or center for the speed.
Speed not sufficient to expand the rim.
Saw dished too much to or from the log.

HAMMERING AND TENSION.

All mechanical arts require a skill acquired by long practice for their perfect execution. No art is more difficult of acquirement than that of saw making. All the conditions under which a saw has to be run, need to be exactly known and provided for in the construction and final finishing of the saw.

For the benefit of our patrons and sawyers using our saws, we take pleasure in explaining the general principles involved in the hammering and tension of circular saws. The practice taught by masters of the art thirty years ago, when saws of small diameter only were used, was that a circular saw to do proper work should be left firm between the center and the rim, and open as to its whole diameter, whereas experience has shown, and it is the practice of the best artists, to open out the body of the saw between the center and the rim to the extent required for the speed the saw is to run.

Very high speed and thin saws require that the saw be opened out until it takes a strong push or pull to throw the center either way when the saw is standing upon the floor. When the saw is in proper tension and is shaken or pulled through, the body only of the saw should vibrate, while the rim should be nearly or quite steady.

Gumming a circular saw, or the alternate heating and cooling of the rim will permanently expand a saw at the rim, and in consequence it will become too stiff in the center or body of the saw and run "snaky," a few strokes of a round-faced hammer on both sides of the saw at the proper place will restore the tension. (See illustration, Fig. 1.) The portion of the saw to be hammered being indicated by the dotted lines. The same treatment is required if the saw is put up for too low speed. The rule is that it must be more open or limber in the body of the saw for fast speed than for slow speed; for hard than for soft wood.

When the saw is standing on the floor and shaken with the hand and the center and rim both vibrate, the saw re-

quires more hammering on the line nearest the rim (Fig. 1.). When opening out the body of the saw, do not hammer within 6 inches to 10 inches of the center.

Observe the motion of the saw when on the mandrel and running up to speed; if it runs wavy on the rim it needs opening out in the body of the saw on the dotted lines (Fig. 1). If it runs steady and true out of the log, it is the fault of the hanging, lining, fitting or management if it does not run steady and true in the log. The dotted lines (Fig. 1) indicate where the face of the saw must be hammered on both sides with the round-face hammer to open the body of the saw for high speed, or when it runs wavy on the rim in full motion. Fig. 2 illustrates examination of the saw with the straight edge in adjusting the tension. The center of the saw resting on the anvil, the rim back of the anvil supported on a narrow bench extending from the anvil to the wall, and the opposite point raised with the hand, the straight-edge extending from the center toward the rim of the saw.

If the saw is properly opened in the body the portions indicated by the dotted lines in Fig. 1 will drop away from the straight-edge (Fig. 2) equally all around the saw. To equalize the tension, the parts which drop least require hammering until the tension is equalized and all parts indicated by the dotted lines drop equally all around the saw. The center line should drop a trifle more than the others.

Hammering to take out lumps should always be done on the high side or on that point which touches the straight-edge. Lumps or ridges upon or near the rim may be found with the straight-edge by examining that part of the saw, with the center of the saw resting on the anvil; but lumps or ridges in the body of the saw should be found with the saw standing upon the floor perfectly perpendicular (Figs. 3 and 4). Mark with chalk the high points which touch the straight-edge on either side of the saw, and hammer where marked, either on a slightly oval wooden block, or an anvil. (The anvil is preferred by practical saw makers.)

If the anvil is used, allowance must be made for change in tension produced by the blow of the hammer, as every blow upon the anvil stretches and opens the saw at the point hammered. If the end of a wooden block is used in taking out lumps, the tension will not be affected. The tension must be adjusted by hammering on the anvil. Lumps usually run in ridges and should be hammered out with a cross-pene hammer, the pene following the ridge in the direction which it runs as discovered with the straight-edge. Round lumps may be hammered down with the round-face hammer, or with the cross-pene hammer by changing the hammer over betwen each blow so that the strokes cross each other. The strokes should be directly on the lump or ridge.

The adjustment of tension is preferably done with a hammer having a slightly oval and perfectly round face. Figures 3 and 4 illustrate the examination of the saw for lumps and ridges when standing on the floor. Move the level across the saw from *a* to *b* (Fig. 3) all over the surface on both sides of the saw, rolling the saw on the floor while making the examination, and mark the points which touch the straight-edge, the lumps x and the ridges——.

Test the saw with the straight-edge between the center and edge from *c* to *d* (Fig. 4) all around the saw, marking the lumps and ridges as before. Hammer slightly on the points marked. After leveling, examine the tension; if it remains as before, your saw is ready to go on to the mandrel, for test, but if not, adjust the tension again with the round-face hammer; then level it again, and, if necessary, adjust again for tension, and so on until the saw is perfect. If the saw has an even tension, put it on the mandrel and run it up to speed. If it runs steady and true, it is ready for fitting, and, when properly hung and fitted, it will stand up to its work.

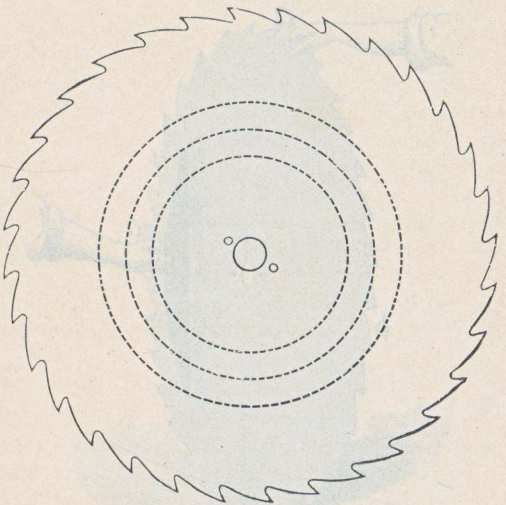


Fig. 1

Fig. 2

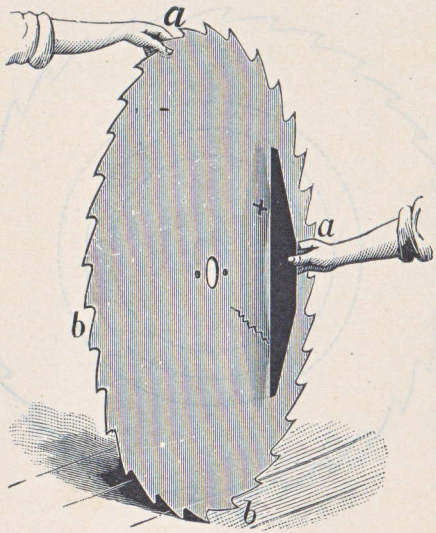


Fig.3

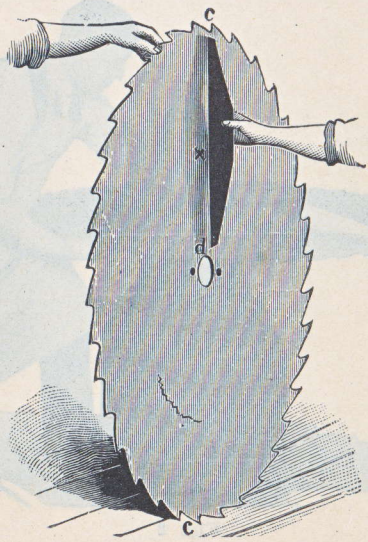


Fig. 4

TO LUMBER MANUFACTURERS AND SAW OPERATORS.

CAUSES OF COMPLAINT.

Good saws are frequently ruined by crowding them beyond their limit of endurance and by unskillful use. There are other causes which tend to produce dissatisfaction with good saws, among which may be mentioned: Saw too thin; teeth too coarse; saw not properly hung; saw not properly fitted or dressed; saw not properly balanced on mandrel; a badly running carriage; collars not true.

PROCURE GOOD SAWS.

In justice to saw-mill men, we have to say that they sometimes have good reasons for complaint on account of bad saws, which leads us to remark that it is the duty of every saw-mill man to procure a good and reliable saw. Too many are governed by prejudice in the selection of a saw, while others allow themselves to be influenced in the purchase by the matter of a few dollars in price. Purchasers should consider only the character of the saws offered them, based on the reputation of the manufacturer.

ATKINS SAWS RELIABLE.

We are ready to admit that we are not infallible in our work, but we claim most emphatically that we have come as near perfection in saw making as is possible, as we use only the finest grades of selected steel and have in our employ the most skillful mechanics, assisted by the most modern machinery and appliances.

Our methods of tempering and adjusting circular saws produce uniform results, unexcelled by any methods known to the trade.

These facts, together with our invariable disposition to comply with the terms of our warranty, assure the buyer of the reliable character of the Atkins Saws.

POINTS TO BE OBSERVED IN ORDERING SAWS.

In ordering a circular saw, the kind of work to be done and the power at hand to drive it, should always be taken into account.

GAUGE OF SAW.

For mills of ordinary capacity, doing general work, we recommend saws seven gauge at the center, and eight on the rim. If the timber is valuable and the sawyer skillful, an eight by nine gauge may be used and in special cases an eight by ten gauge. Any lighter gauge than eight at the center and ten at the rim we consider impracticable for use in ordinary mills. A trial of very thin saws as an economical means, will in most cases, be followed by disappointment, for greater than ordinary skill is necessary to successfully manage thin saws, and the lumber saved by the reduced thickness of the saw is more than offset by the waste by bad cuts, where the sawyer is not an expert.

The greater the speed and feed used, the heavier the saw should be to stand up to the work, hence it is that for the large mills, where the saving of time more than lumber is desired, saws of six and seven gauge are mostly in demand.

NUMBER OF TEETH.

With a high motion more teeth are required, for high feed follows great speed, and the saw having more work to do should have more teeth with which to do it in order that the strain may be evenly distributed.

The number of teeth, therefore, should depend not alone on the thickness of the saw, but on the kind of timber to be sawed, and the speed and feed of the mill.

Having considered these matters, orders for circular saws should be accompanied by the following:

INSTRUCTIONS FOR ORDERING CIRCULAR SAWS.

In ordering Circular Saws be careful to give following specifications in detail:

(*a*) Diameter of saw in inches.
(*b*) Right or left hand (see cut below).
(*c*) Gauge (thickness) of saw at center and also at rim.
(*d*) Number of teeth in saw.
(*e*) Style of pattern of tooth (see cut on page 45).
(*f*) Diameter of mandrel hole; diameter of pin holes; and distance center to center of pin holes.
(*g*) Number of revolutions of saw per minute **while in cut.**
(*h*) Greatest feed used.
(*i*) Kind of timber sawed.
(*j*) Spring or swage set.
(*k*) For rip or cross-cut work.

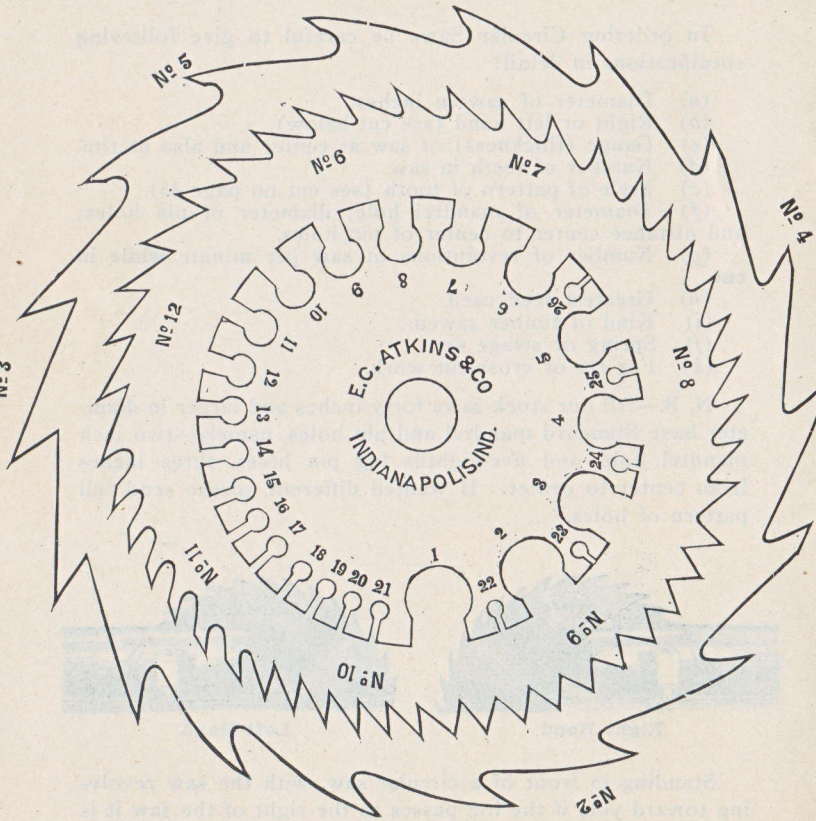
N. B.—All our stock saws forty inches and larger in diameter have Standard mandrel and pin holes, namely—two inch mandrel hole, and five-eighths lug pin holes, three inches from center to center. If wanted different, please send full pattern of holes.

Right Hand

Left Hand.

Standing in front of a circular saw, with the saw revolving toward you, if the log passes to the right of the saw it is a right-hand saw; if to the left, it is a left-hand saw.

Saws run horizontally (such as shingle saws) are **right-hand** when revolving from left to right (against the sun), or as you turn a right-hand screw thread to unscrew it. They are **left-hand** when revolving from right to left (with the sun), or as you turn a right-hand screw thread to tighten it.



The above illustration represents our various styles and sizes of Saw Teeth; also, our Standard Gauge. By consulting it, a person will be enabled to inform us the size and style of tooth, and also the gauge of any saw he may desire.

THE MOTION OF CIRCULAR SAWS.

This is one of the most essential things to be observed, and no one can give this too much attention. If the speed of the saw is too high it can not do good work, besides rendering it liable to many accidents. It generates heat in the saw, makes it touchy and limber, and it will only run and do good work on light feed, and while the teeth are in the best of order, and have a keen, sharp, cutting corner; as soon as this is gone, the saw will run or dodge whenever it comes in contact with the least obstacle. And again: Too low has its objections, but it is not attended with such ruinous effects upon the saw. These difficulties can be remedied to a limited extent by the hammering of the saw, but can not be entirely overcome.

TABLE OF SPEED OF CIRCULAR SAWS.

Size of Saw, Inches.	Revolutions per Minute.	Size of Saw, Inches.	Revolutions per Minute
8	4,500	42	870
10	3,600	44	840
12	3,000	46	800
14	2,585	48	750
16	2,222	50	725
18	2,000	52	700
20	1,800	54	675
22	1,636	56	650
24	1,500	58	625
26	1,384	60	600
28	1,285	62	575
30	1,200	64	550
32	1,120	66	545
34	1,050	68	529
36	1,000	70	514
38	950	72	500
40	900		

The above table is figured on a periphery speed of 9,000 feet per minute, but saws for portable mills are usually run at a speed of about 450 revolutions per minute, and saws for steam feed mills, from 600 to 900 revolutions per minute.

RULES FOR CALCULATING THE SPEED OF SAWS, PULLEYS OR DRUMS

Problem 1. The diameter of the driven being given, to find its number of revolutions.

Rule.—Multiply the diameter of the driver by its number of revolutions, and divide the product by the diameter of the driven; the quotient will be the number of revolutions of the driven.

Problem 2. The diameter and revolutions of the driver being given, to find the diameter of the driven, that shall make any given number of revolutions in the same time.

Rule.—Multiply the diameter of the driver by its number of revolutions, and divide the product by the number of revolutions of the driven; the quotient will be its diameter.

Problem 3. To ascertain the size of the driver.

Rule.—Multiply the diameter of the driven by the number of revolutions you wish it to make, and divide the product by the revolutions of the driver; the quotient will be the size of the driver.

GENERAL HINTS RESPECTING THE MANNER OF FITTING OR DRESSING SAWS

A saw tooth should have the proper spread and pitch for the wood which it is to cut. Soft wood requires more spread or "set," and less pitch; hard wood the reverse. A saw swaged full on both corners with square dress will do the fastest cutting, but requires the most power. In swaging use oil on point of tooth.

By careless dressing we have seen saw teeth higher back of the cutting point than at the point itself, thereby causing the saw to bind and heat on the rim.

The greater the feed the lower the back of the tooth should be, giving easier clearance and greater dust room.

In spreading the points of teeth it is almost impossible to make them all of equal width, but they may be reduced to a uniform width by the use of our patent Side File, which is illustrated herein.

By this treatment the corners are stronger and less liable to break off in hard cuts.

THE EMERY WHEEL.

Emery wheels, as employed in gumming and sharpening saws accomplish a great saving of time and labor, but when improperly used, as they often are, cause irreparable injury to saws. When the points of the teeth become heated or "blued" by the use of an emery wheel, the steel loses its toughness and tenacity in some degree, and is liable to split and crumble off in the process of spreading the points afterward.

We have had saws returned to the factory in this condition, said to be defective, which we were unable ourselves to spread on the points without checking and breaking them off, but which, after cutting off the points and starting new teeth, stood every test perfectly, thus proving that the trouble was caused by the improper use of the emery wheel.

BAD FILING.

No saws are so liable to crack in using as circular cut-off saws for the reason that they are generally filed so as to leave a square corner at the base of the teeth, and the bevel of the face being carried down into this corner, still further weakens it. Saws broken in this condition can not be considered subject to our warranty.

It is surprising that so many still persist in this manner of filing, when a few strokes with a round file at the base of the tooth after beveling the front, will keep it in good shape by preventing the formation of the square corners from which the crack starts. The saw will clear better if the bevel is carried down only half the depth of the teeth.

Table of Fractional and Decimal Equivalents to Atkins Standard Gauge.

Gauge	Fractional Equivalent	Decimal Equivalent	Gauge	Fractional Equivalent	Decimal Equivalent	Gauge	Fractional Equivalent	Decimal Equivalent
1	$\frac{9}{64}$ in. full	.300 in.	10	$\frac{9}{64}$ in. scant	.134 in.	19	$\frac{3}{64}$ in. scant	.042 in.
2	$\frac{9}{32}$ in. full	.284 in.	11	$\frac{1}{8}$ in. scant	.120 in.	20	----------	.035 in.
3	$\frac{7}{64}$ in. scant	.259 in.	12	$\frac{7}{64}$ in. scant	.109 in.	21	$\frac{1}{32}$ in. full	.032 in.
4	$\frac{5}{64}$ in. full	.238 in.	13	$\frac{3}{32}$ in. full	.095 in.	22	$\frac{1}{32}$ in. scant	.028 in.
5	$\frac{7}{32}$ in. full	.220 in.	14	$\frac{5}{64}$ in. full	.083 in.	23	----------	.025 in.
6	$\frac{5}{64}$ in. scant	.203 in.	15	$\frac{5}{64}$ in. scant	.072 in.	24	----------	.022 in.
7	$\frac{11}{64}$ in. full	.180 in.	16	$\frac{1}{16}$ in. full	.065 in.	25	----------	.020 in.
8	$\frac{11}{64}$ in. scant	.165 in.	17	$\frac{1}{16}$ in. scant	.058 in.	26	$\frac{1}{64}$ in. full	.018 in.
9	$\frac{9}{64}$ in. full	.148 in.	18	$\frac{3}{64}$ in. full	.049 in.			

PATENT CHISEL BIT SAWS.

In this department the claims made for our Solid Tooth Saws apply as well. The **same kind of steel** is used for the plate, **not** a cheaper material on the theory that it does not require a cutting edge. The saws are **tempered in the same manner,** and as carefully tested to guard against flaws or defects of any kind.

The bits are made from a **specially selected steel** manufactured expressly for our use and containing in the highest degree the qualities required in a saw tooth, namely: An exceedingly **hard,** but **tough,** temper, capable of holding a cutting point for a long time, thus producing the largest possible output of lumber per set. In this respect the Atkins bits have a remarkable record. The **shape** of the bit is another point of superiority. Particular attention has been given to the best form of forging and grinding to give the greatest amount of wear with the best clearance and yet preserve the swage until the bit is worn out.

The **holders** are made from another kind of steel, also selected for the specific work required, namely: A strong spring, not easily broken, and yet hard enough to stand the wear. They are also shaped to give maximum amount of wear, and keep the dust from crowding between the blade and the timber.

Our styles of teeth and holders are adapted to the needs of all sections. While we illustrate those which we deem the best and most in demand, we manufacture several other patterns, including those most largely used besides the styles shown.

N. B.—We manufacture or will procure extra teeth for all makes of saws. In ordering give number (indicating style) and gauge, or send sample. Send for circular showing styles of teeth manufactured by us. Solid Tooth Saws and Inserted Tooth Saws of any kind made over into our **Improved Patterns** at reasonable prices.

INSERTED TOOTH SAWS.

Our Inserted Tooth Saws are made on scientific principles and their construction embodies all the improvements in this class of saws. Our machinery for the manufacture of the Bits and Holders is the result of years of experience and costly experiment. We have arrived at a point in this department of the saw business where we can safely guarantee our Inserted Tooth Saws to be superior to any on the market.

Our saw plates are properly tempered, tensioned and prepared for the bits and holders. The sockets are accurately milled to insure a perfect fit. Our holders are uniform in size and temper. Our bits are so made as to secure a perfect fit, and the proper hook or pitch to do good work. All holders and teeth are readily interchangeable with holders and teeth of like numbers, and no extra work of fitting is required in making a change to a new set of bits. The bits are so ground that dressing the front of the bit only is required to preserve the proper shape point until the bit is worn out.

CARE OF INSERTED TOOTH SAWS.

Guide pins must be set so that the holders will clear the pins at all times.

Holders become worn, especially in gritty logs, and the edges become round. This permits the sawdust to pass between the saw and the log, causing the saw to heat. To prevent this the edges of the holders should be kept square by filing square across. We furnish most of our holders swaged one and one-half gauges wider on the inner circle than the saw-plate proper to allow for this wear and to prolong the life of the holder. For frozen timber this style of holder is especially adapted.

When the sockets holding the shank are worn large from long use it is best to order special size holders, which are made 1-64 inch to 1-32 inch larger in the circle than regular holders.

Holders should fit snugly.

A holder that has become compressed through accident may be expanded by removing from saw and pening on an anvil on the inner circle, hammering equally on both sides.

TO INSERT NEW POINTS.

Carefully clean the groove in the bit and shank and the V in the socket. Drop a little oil into the groove in the

holder and bit. Place the bit squarely on the head of the shank and bring into place without undue pressure.

Points should be kept sharp with a file, being careful to do most of the filing on the front of the tooth, only filing on the back to remove the burr. The use of a special file, called the chisel-point file, will preserve the original shape and hook to the tooth until worn out. Do not use a square-cornered file, as it will leave a sharp corner in the bit and may cause the bit to break and so injure the blade.

If bits are swaged, the swaging should be done only after removing the bits from the saw. Swaging while in the saw is apt to upset or batter the bearing against the shoulder or strain the shank.

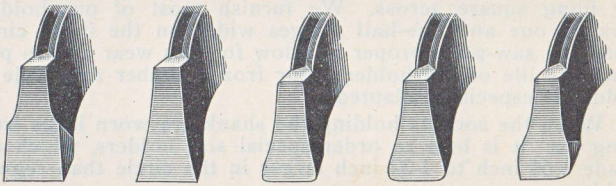
A small piece of saw plate with one socket, which may be placed in a vice, will be furnished at small cost.

Particular attention is called to the necessity of keeping the cutting point widest.

For winter sawing in frozen timber it is not desirable to use a side file, as the side file leaves flat places on the sides of the points parallel to the sides of the saw. For this kind of sawing it is possible to use a narrower point on the bit than for summer sawing.

The illustration on page 21 shows the proper filing for Inserted Tooth Saws.

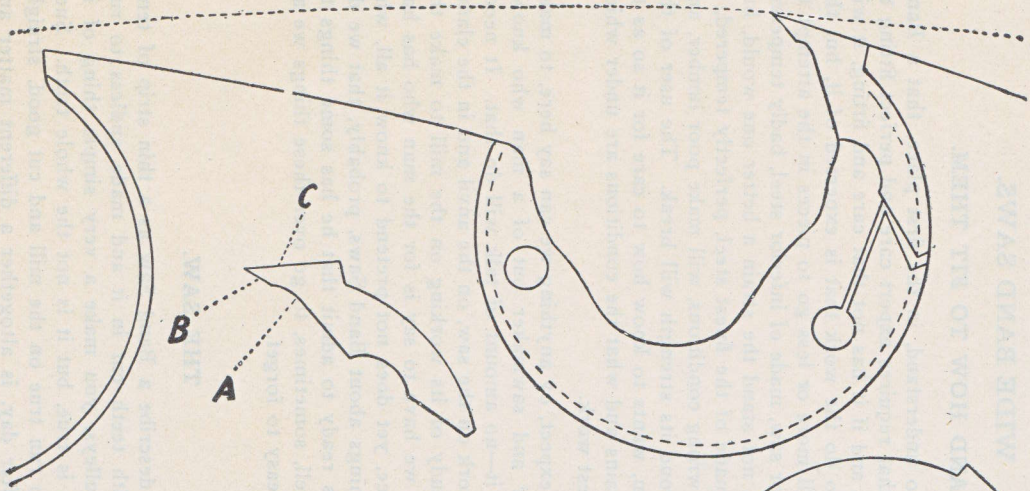
In the following cut figures Nos. 1 and 2 show proper methods; figures 3, 4 and 5 show improper methods.



No. 1 **No. 2** **No. 3** **No. 4** **No. 5**

We manufacture several different styles and sizes of Inserted Teeth and Holders to suit various requirements.

In ordering duplicate points and holders we recommend that the shop number of the plate be given, so we will make no mistake in filling such orders.



A.—Throat.—No filing necessary.
B.—Face.—File very little, just enough to sharpen.
C.—Back.—File only enough to take off burr.

WIDE BAND SAWS.

AND HOW TO FIT THEM.

It is well to understand, in the first place, that a Band Saw is a tool that requires expert care and perfect fitting to do good work, and if it has not that care and fitting, it will not only fail to do the work that is expected of it, but the chances are will more or less go to pieces in the attempt to force it. A poor saw, made of inferior steel, badly tempered, will, of course, not stand the strain a better one would, but the best saw, made of the finest steel, perfectly tempered, if run under the wrong conditions, will make poor lumber, and if strained beyond its strength will break. The user of the Band Saw, then, wants to know how to care for it so as to avoid these strains and what the conditions are under which it will do its best work.

We do not expect, by anything we can say here, to make an expert filer and sawmaker out of a man who knows nothing about it—no amount of talk will do that. It needs the practical work on the saw, on the anvil and in the clamp and a close study of its working on the mill to make the expert. What we have to say is for the man who has had some experience, yet does not pretend to know it all, who knows some things about Band Saws, probably, that we do not, and yet is ready to admit that he has some things to learn. It is well, sometimes, to go over these things we all know; it is so easy to forget.

THE SAW.

When you describe a Band Saw as a thin strip of tempered steel with teeth cut in it and made endless to run around two pulleys, you make a very simple thing of it. What you say is true, but it is not the whole truth. Such a saw made to run true on the mill and cut good, straight lumber, day after day, is altogether a different matter and becomes a very complex thing.

The saw man understands that. He knows that the saw, before it can do such work, must be skillfully tensioned by rolling and hammering, so that it will rest on the pulleys in a certain way and the heavy strain come where it belongs, on the edges of the saw and not in the center. He knows that the teeth must have a certain shape, nicely pitched, with enough throat room to take care of the sawdust, and the points so swaged out that every tooth is exactly like all the rest, to insure smooth lumber. He knows that these points must have a fine cutting edge and must yet be so strong and well braced that they will not break off when going through the hard knots. He knows, too, that the saw, to do this heavy work, must run at a speed of nine or ten thousand feet a minute under great strain, and must do it without the slightest jar or trembling. The strip of tempered steel that will do that, and keep on doing it, cutting at the rate of from 30,000 to 75,000 feet of lumber a day, is a band saw, and a good one, well put up.

THE TENSION.

This is the opening up or expanding of the center of the blade to make the strain on the band come on the edges, and is probably the most important and difficult work in the manufacture and adjustment of the saw. Just why this tensioning is necessary it would perhaps be hard to explain, but it is certain that the tooth edge cannot be made to run true without it. It is the tooth edge that does the cutting and the rest of the saw must be made to back it up. This tensioning must be done truly and evenly the entire length of the saw. If not, the saw will strain unevenly, and as a result will run badly and probably break. Too much care can not be taken in putting in the tension. It is done by hammering and rolling. Some sawmakers use the rolls altogether. We advocate large use of the hammer, as we believe a saw tensioned in that way holds its shape much longer.

The tension should be as perfectly uniform as possible throughout the length of the blade. A fast place may cause

fracture from undue strain at that point; and a loose place, from excessive vibration. The tension should be so adjusted that the saw will bear firmly upon the face of the wheels, the principal strain being near the edges of the saw. When the saw is in proper tension the central portion of the blade is expanded, or opened up, so that when the saw is raised, the middle will drop away from the straight-edge 1-32 to 1-16 of an inch, as in Figure 1.

Two methods of testing for tension are in use. In the first method the operator raises the saw while the straight-

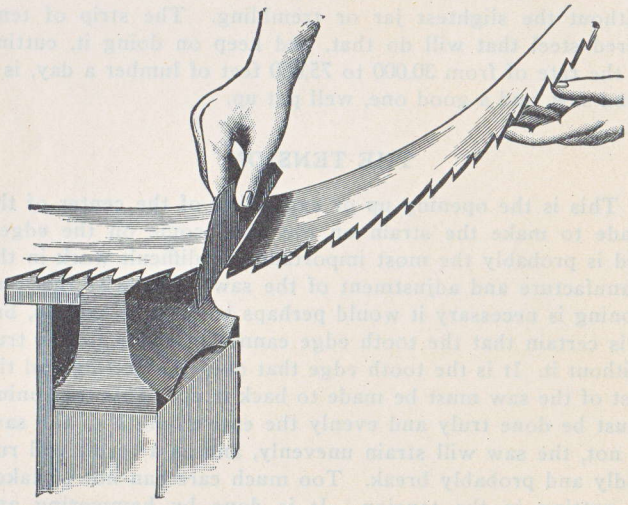


Fig. 1.

NOTE.—First Method. The central portion being in proper tension, drops from the straight-edge when the saw is raised. If too open, roll or hammer with the round-face hammer along both edges on both sides of the saw.

edge is held firmly across it and the loose or open places will drop away from the straight-edge (as in Fig.1), and the fast or firm places will be drawn to the straight-edge (as in Fig. 2). This is the method in common use and is the most convenient.

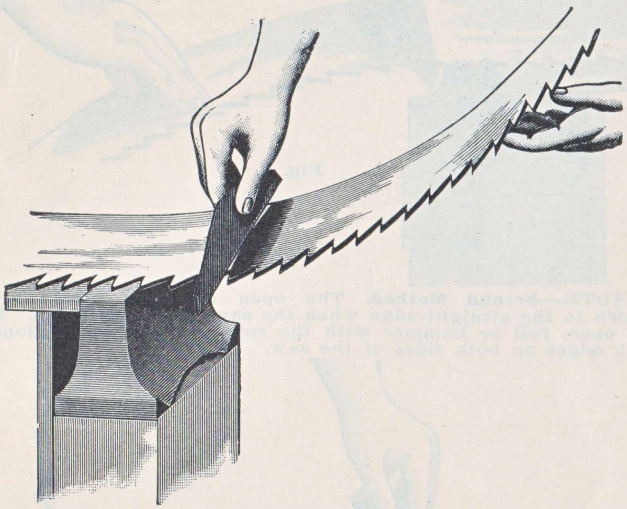


Fig. 2.

NOTE.—First Method. The central portion being fast and requires opening up, is drawn to the straight-edge when the saw is raised. These fast places require rolling, or hammering with the round-face hammer on both sides of the saw.

In the second method the saw is pressed down by the operator, and in this method the loose places are drawn to the straight-edge (Fig. 3), and the fast or firm places drop away from it (Fig. 4). Some experts claim this method, although more difficult to operate, will disclose variations of tension, even the smallest loose and fast places, which could not be detected by the first method.

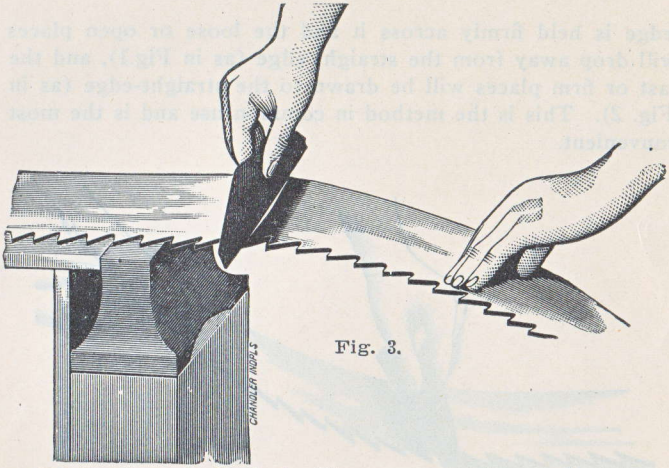


Fig. 3.

NOTE.—Second Method. The open or loose places are drawn to the straight-edge when the saw is pressed down. If too open, roll or hammer with the round-face hammer along both edges on both sides of the saw.

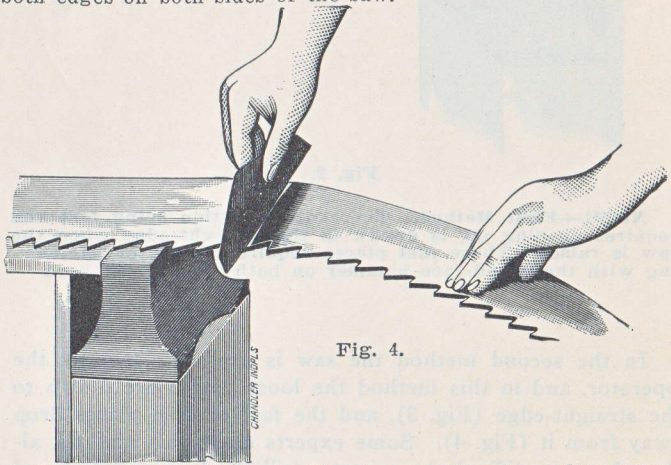
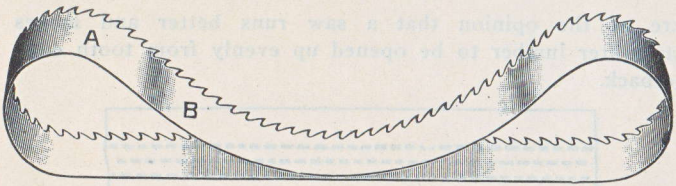


Fig. 4.

NOTE.—Second Method. The fast or firm places drop away from the straight-edge when the saw is pressed down. These fast places require opening up with the rolls, or round-face hammer. Hammer on both sides of the saw.



NOTE.—With the brazed saw on the floor at the point "A" a properly tensioned saw will show an even crown from edge to edge, and at point "B" an even dish from edge to edge.

To increase the tension, open up the center or body of the saw by rolling or hammering (see dotted lines Fig. 5). If the rolls are used, some hammering will be required after rolling, to even up the tension so as to make it uniform throughout the length of the blade. The greatest tension should be in the middle of the blade, where no strain or pressure is exerted, but the tension should show even from edge to edge when pressure is applied. If it is desirable to carry what is known as a tension rim, when no strain or tension is exerted, the greatest tension should be in the middle of the blade, decreasing gradually within a short distance from the edges, say ¾ inch to 1½ inch on the back edge and 2 inches on the tooth edge.

The wider the saw and the heavier the work to be done, the wider the firm band on the edge should be. This is evident when it is remembered that a 12-inch band saw is subjected to a strain of from six to seven tons in use, in addition to the strain of the cut. By this means a narrow, firm band extends the length of the saw, along each edge, which receives the principal strain.

There is, however, a great difference of opinion among filers as to the value and width of this tension rim. Some believe in a good wide tire, others reduce it to a narrow strip, and still others, and many of the most successful filers,

are of the opinion that a saw runs better and makes straighter lumber to be opened up evenly from tooth edge to back.

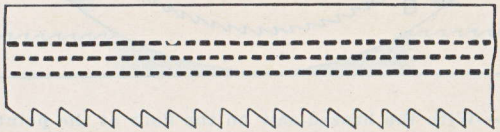


Fig. 5.

NOTE.—To open the saw and give it more tension, roll or hammer with the round-face hammer along the central portion of the saw indicated by the dotted lines.

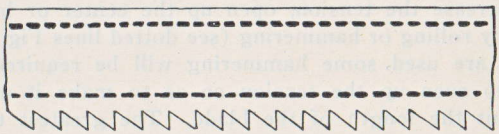


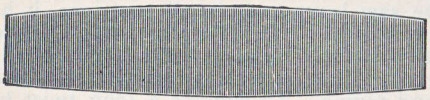
Fig. 6.

NOTE.—If the saw is too open reduce the tension by rolling and hammering with the round-face hammer on both sides of the saw, near both edges, as indicated by the dotted lines.

If the saw has too much tension, that is to say, is opened up too much through the center, the tension may be decreased by hammering near the edges of the saw, on both sides (see dotted lines on Fig. 6).

The round-faced hammer is used for tensioning; light strokes should be used, and the hammering done equally on both sides of the saw. Keep at least ¼ of an inch from the edge of the saw. Test frequently with the straight-edge or tension gauge. Hammer as little as possible. No heavy blows should be struck, and the hammer faces should be nearly flat. The tension must be adjusted to suit the crown of the wheel and feed used, the drop from the level in testing varying from 1-32 to 1-16 of an inch in ten inches wide. In hammering and rolling a band saw to adjust the tension all work must be done on the fast or firm part of the blade. The tension gauge (Fig. 7), with the edges curved to suit the crown of the wheels and feed used, will be found useful

in testing for tension, and if the saw is in proper tension, and the saw raised by the operator, the blade should fit the curve of the tension gauge.

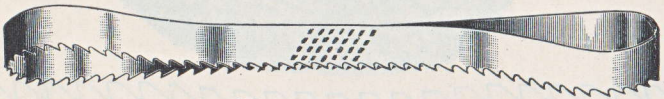


Tension Gauge. Fig. 7.

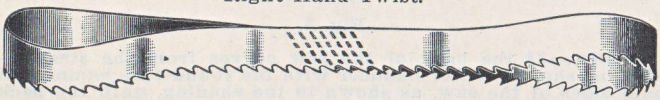
NOTE.—The tension gauge may be made with curves of different diameter on its edges. If the tension gauge is of the proper curve for your mill, the saw, when raised, if in proper tension, would fit the curve of the gauge.

TWISTS AND LUMPS.

These are detected by the use of the short straight-edge while the saw rests on the leveling table, and are removed by hammering lightly with the cross-face and twist-face hammers. The faces of these hammers should be nearly flat. Heavy blows and sharp hammers are sure to crystallize the steel and cause fracture at the point of contact. Lay the saw upon the leveling table, examine it by passing a straight-edge over it at different angles. Whenever ridges appear, trace their direction, or the angle at which they run along the surface of the saw, and mark same with a piece of chalk. Draw the part which shows lumps or twists over the anvil, and hammer down the ridges. In hammering down the ridges, the face of the hammer should always run in the direction of the ridge.



Right Hand Twist.



Left Hand Twist.

A saw free from twists will stand perfectly plumb when on the floor. If the saw leans either to the left or the right, it is evidence of a twist. To determine whether a long or

short twist, roll the saw until you turn it completely around. If at one point the saw leans over and at another point it stands plumb, the twist is short and only covers part of the blade. If the saw leans over in all positions, it has a twist that effects the entire blade. To remove a short twist, hammer diagonally in the direction of the lump equally on both sides of the saw clear across, covering the portion which does not stand plumb. To remove a long twist hammer as above the entire blade, from end to end. A saw with a short twist will run back and forth on the wheels. A saw with a long twist will run either backward or forward according to the direction of the twist.

STRAIGHTENING THE BACK.

Use the five-foot straight-edge on the back of the saw. While it rests on the leveling table mark the extent of the curve with the chalk. The back of the saw may be drawn to a straight line or a true outward curve by using the round-face hammer upon and near the edge, carrying the blows into the central portion of the saw (Fig. 8), and so preventing unequal expansion and leaving the saw open. Or better, by the use of the rolls in the same way.

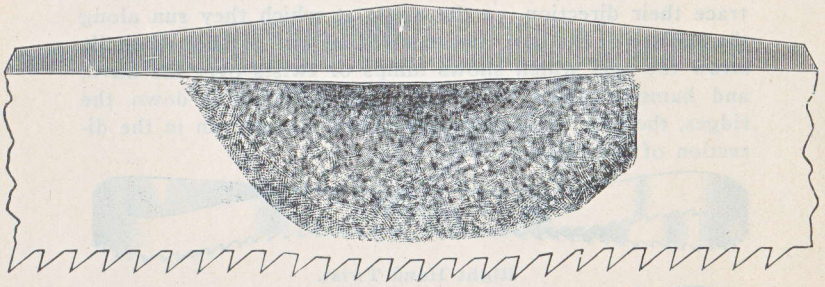
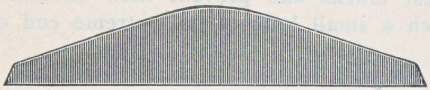


Fig. 8.

NOTE.—If the back of the saw curves from the straight-edge, as shown, roll or hammer with the round-face hammer on both sides of the saw, as shown in the shading, until the back shows rounding about 1-16 to 1-8 inch in fifteen feet, if the saw is wanted rounded on the back. A convenient method of testing the curve is to place two iron pins fifteen feet apart, and one pin central between the others on the curve you find operates best on your mill, which should not exceed 3-16 of an inch in fifteen feet By moving the saw along, with the back resting against the pins, every section of the saw may be gauged to a true curve, suitable for your mill.



Short Straight-Edge. Fig. 9.

NOTE.—The straight-edge is used for testing saw for twists and lumps on leveling table, and when hung on wheels. Also used in testing saw for tension, as illustrated in Figures 1 and 2, First Method, and 3 and 4, Second Method. In testing with straight-edge for tension, the space between the straight-edge and saw through which the light passes, should be the same throughout the entire length of the saw, and there should be no places where the tension varies from the center, or is too close to the edge of the saw.

If the back of the saw is too rounding, the hammering or rolling must be done upon the toothed edge. Light blows should be used, and both sides of the saw hammered equally, care being taken not to give heavy blows on the extreme edge of the saw, which may cause fracture.

It is desirable that the toothed edge should be strained a little tighter than any other portion of the saw. To accomplish this, and preserve uniformity of tension, the back of the saw should be rolled or hammered to a curve, showing about 1-64 inch in five feet, or 1-32 inch in fifteen feet rounding, then by tilting the upper wheel so that the saw has a uniform pressure all across the blade, this will secure a tightly strained tooth edge without subjecting the saw to undue strain upon the edge, caused by an all tilt movement.

Do not permit the back of the saw to touch the back guide wheel. If it becomes case-hardened by running against the guide wheel, hold a piece of soft emery wheel against the back edge, while moving slowly, and so remove the case-hardened portion at once.

The strain put upon the saw in the best constructed mills is rarely over 5,000 to 12,000 pounds, and should be only sufficient to prevent slipping on the wheels. The use of the roller or stretching machine for putting in tension and regulating the curve of the back is preferable to all hammering, but the use of the hammer after rolling is necessary to insure the perfect adjustment of tension.

To arrest cracks and prevent their extension into the blade, punch a small hole at the extreme end of the fracture.

FEED, PITCH OF TEETH, AND CLEARANCE.

These are important features in the use of band saws. The speed should be maintained at a uniform rate. Sudden and excessive increase is liable to result in fracture of the saw. Under heavy feed the pitch of the teeth should be in corresponding ratio, say from 4 to 6½ inches in ten inches width of saw, and the clearance on the back of the tooth maintained at a proper angle to the pitch. If the pitch and clearance are maintained at the proper ratio, the saw will run steady on the wheels without lateral motion, and if properly tensioned, seldom, if ever, touch the back guide wheel or run off the wheels.

SHAPE AND SWAGE OF TEETH.

The teeth should be as short as will afford proper dust room, and gullets always round; no sharp corners to invite fracture. Long teeth vibrate in the cut, and vibration from any cause is ruinous to successful band saw practice. In band swaging we advise the use of the Atkins Ideal Swage, to be followed by the Pribnow Shaper. The Shaper insures a perfect shape of point, having the under cut or bevel from outside of **point** to blade, essential to perfect lines and smooth **work.**

TROUBLES OF THE FILER.

CRACKING.

When a band saw cracks it is safe to say it is due, either
To some fault in the blade itself,
To some fault in the handling of the saw, or
To an accident.

Saw manufacturers are not beyond making mistakes. We do not pretend to be. But our facilities for turning out a perfect saw are most complete. Our material is the finest saw steel that can be obtained. Our tempering processes are the result of years of study and can hardly be improved upon. Every saw is tested repeatedly in the manufacture and our final inspection is rigid. Certainly not many poor saws get by us. Because a saw cracks, therefore, do not be too ready to conclude that the material or temper is at fault. When the best saw is unusually strained in any part beyond the point where the steel can resist, it will break. Steel cannot be made so tough, and still be steel that will hold a cutting edge, that it will not crack under certain conditions.

The blame may be—
In the mill,
In your tensioning and fitting of the saw.
You may have abused the steel—
By your emery wheel.
By your guides.

See that your mill is well constructed, having closely fitted bearings, perfectly balanced wheels and sufficient weight of metal properly distributed to stand the heaviest strains put upon it without vibration. Prevent vibration from every cause as much as possible, by keeping the mill in perfect condition and everything in good order. Have the wheels flat or with very little crown—1-16 of an inch is sufficient. More than that means unnecessary tension in the saw to fit it and this produces vibration. It is often well to relieve the back edge slightly to bring the strain on the front edge of the teeth.

If there is any indication of the wheels being worn out of true they should be turned up at once by a competent millwright—worn wheels are very apt to produce cracks, as they strain the saw unevenly.

A saw may crack when the tension is uneven or put in the wrong way. Note carefully the article before this on tension. Go over your saw carefully with the tension gauge every time it is put on the bench and be sure it is right. Better a little work with the rolls or hammer every day than making over the saw after it begins to crack.

Be sure that your emery wheel is the right kind, that it grinds freely, and do not put too much pressure on it or you will burn the teeth. This means a change in the nature of the steel—it becomes brittle and as hard as glass where burned. Tiny checks develop at those points when the saw is bent around the pulleys and cracks result.

The same thing happens to the back edge when the saw is run back too much against the back wheel, when such is used, and to the center of the blade when the guides grip it too firmly. In both cases the steel is burned and case-hardened from the severe friction and cracks are apt to follow.

Accidents will happen in the best of mills and there are no rules to prevent them.

SNAKING.

When a saw snakes or dodges in the cut, it is due to faulty tension or bad dressing of the teeth. If the blade is not opened up as it should be in the center and the tight rim left at the edges, the tooth edge will not be as taut as it should be when the saw is strained up. See directions for putting in tension. If the swage is stronger on one side than the other, or if the teeth are bent out of line, the saw will naturally lead in that direction. We would advise the use of our Pribnow Shaper to insure the teeth being all alike.

DROPPED CORNERS.

These may be due to a fault in the steel. If a decided seam should develop, we should at once be notified and the saw returned. We inspect carefully every saw for evidence of split teeth, but the seam does not always show at the first dressing. Dropped corners may again be due easily to the emery wheel burning the points and so making them brittle, or to some fault in your swage. Be sure the trouble is in the steel before condemning the saw.

GUIDES.

A word as to the proper kind of guides is in order. Wooden guides are by far the best and safest, as a saw cannot be case-hardened by wooden guides. The use of babbit metal guides is always risky, as chips get down between the saw and the guides and cause trouble. The manner of placing the guide is also an important matter, and if the blocks are placed as shown in the attached cut, the chips will always drop off before they get down between the guide and the saw.

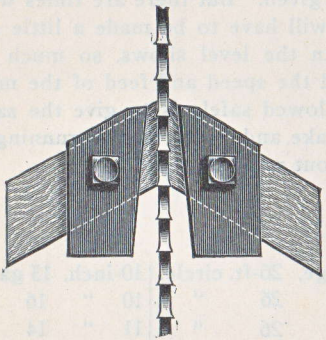


TABLE OF STRAIN FOR BAND SAWS.

Compiled from Standard Authorities.

Size	Gauge	Pounds	Size	Gauge	Pounds
Inches			Inches		
6	16	4,212	10	15	7,770
6	17	3,756	11	13	11,286
6	18	3,174	11	14	9,856
6	19	2,718	11	15	8,547
6	20	2,268	12	13	12,312
7	15	5,439	12	14	10,752
7	16	4,914	12	15	9,324
7	17	4,382	13	13	13,338
8	14	7,168	13	14	11,648
8	15	6,216	14	13	14,364
8	16	5,616	14	14	12,544
9	14	8,064	15	13	15,390
9	15	6,993	15	14	13,440
9	16	6,318	16	13	16,416
10	13	10,260	16	14	14,336
10	14	8,960			

TABLE SHOWING CIRCLES OF TENSION FOR BAND SAWS OF DIFFERENT WIDTHS AND GAUGES.

We cannot give figures that can be followed exactly in every case. We give the circles on which our levels are made and they are as near to the required tension in the saws as can be given. But there are times when a saw to do the best work will have to be made a little stiffer or a little more open than the level shows, so much depends on the blade itself and the speed and feed of the mill. A good rule that can be followed safely is to give the saw as much tension as it will take and lie flat on the running board, and this table shows about what that is:

6-inch,	16	gauge,	26-ft.	circle.	10-inch,	15	gauge,	35-ft.	circle,
6	"	17	"	26	"	10	"	16	"	40	"
6	"	18	"	26	"	11	"	14	"	40	"
6	"	19	"	30	"	11	"	15	"	45	"
6	"	20	"	30	"	12	"	13	"	40	"
7	"	15	"	30	"	12	"	14	"	40	"
7	"	16	"	30	"	12	"	15	"	45	"
7	"	17	"	30	"	13	"	12	"	50	"
7	"	18	"	30	"	13	"	13	"	50	"
7	"	19	"	35	"	13	"	14	"	50	"
8	"	14	"	30	"	14	"	12	"	50	"
8	"	15	"	30	"	14	"	13	"	50	"
8	"	16	"	30	"	14	"	14	"	50	"
8	"	17	"	35	"	15	"	12	"	55	"
8	"	18	"	35	"	15	"	13	"	55	"
9	"	14	"	30	"	15	"	14	"	55	"
9	"	15	"	30	"	16	"	12	"	66	"
9	"	16	"	30	"	16	"	13	"	66	"
9	"	17	"	35	"	16	"	14	"	66	"
10	"	14	"	30	"							

OPERATOR'S ROOM AND TOOLS.

If the location of the mill will permit, have the operating room well lighted from the north. Locate the anvil, etc., as shown in Figure 10.

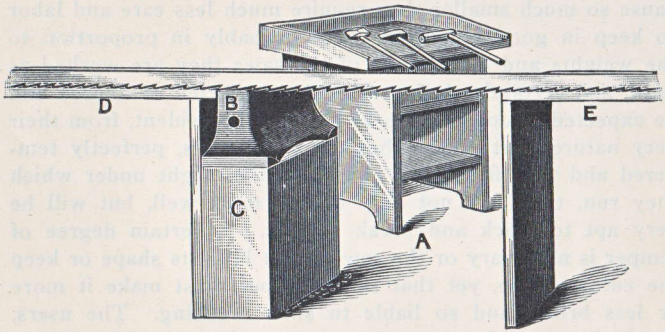


Fig. 10.

NOTE.—A indicates position of operator and hammer board; B. anvil; C, anvil block; D, leveling table; E, saw board

For hand work the tools required are:

One anvil, of 80 to 100 pounds weight; one cross-face, one round-face and one twist-face hammer, weight of each about 3½ pounds; one five-foot and one twelve-inch straight-edge; one tension gauge; one leveling table; one brazing table and irons; one portable forge for heating the irons; one Ideal swage; one Pribnow shaper; one side file; one jointer; one set of pulleys and stands; one clamp for setting, swaging and jointing round edge mill saw files.

For machine work:

One roller stretching machine; one automatic band saw sharpener; one automatic power swage; one scarfing machine.

All the above we are prepared to furnish on application.

A TALK ON NARROW BAND SAWS.

All band saws under two inches in width come under this head. They are simply the wider bands reduced in all specifications—narrower in width, thinner in gauge, with finer teeth, shorter in length, and used for lighter work. Because so much smaller they require much less care and labor to keep in good condition. Yet probably in proportion to the weights and dimensions of the saws they are worked as hard, and certainly they can not be neglected or abused and be expected to do good work. It must be evident, from their very nature, that unless they are good saws, perfectly tempered and well fitted, and the conditions right under which they run, they will not only fail to work well, but will be very apt to crack and break besides. A certain degree of temper is necessary or the saw cannot hold its shape or keep the cutting edge, yet that same temper must make it more or less brittle and so liable to such breaking. The users, then, of narrow band saws, to get good results, should unquestionably first get the best saws to be had, and then take such care of them that they will not break.

The manufacturer of the saw is responsible only for the saw itself and cannot control the machine it is run on, the way it is cared for or the work it is made to do.

It is unnecessary for us to say here that we know our narrow bands are right in every way—in temper, in material and finish—it would not convince you and nothing that we could say would. Only a trial of the saw would do that, and such a trial, a fair and honest one, we ask you to give it. What we want to talk about now is the saw you use and the care you take of it. And first as to the selection of the saw.

By standard gauge and teeth, as used in the price list, page 45, is meant the gauge and number of points to the inch usually put in saws of that width and which have been found by long usage and experiment to be the best for the

work such saws are ordinarily used for. Saws of standard gauge and teeth we always carry in stock for immediate delivery. We also carry large stocks of unfinished saws in heavier and lighter gauges from 18 to 23 in all widths and can put in these any special teeth, from the coarsest to the finest our customers may desire.

We beg to say, however, that unless special saws are wanted for special work, the standard saws should be used.

Too heavy saws are more liable to crack from the strain of passing around the small pulleys.

Too light saws will not stand as heavy feed and are liable to break when forced beyond their capacity.

Too coarse teeth means too great a strain on each tooth.

Too fine teeth means too little throat room for the sawdust.

THESE ARE REASONS WHY NARROW BANDS CRACK.

But the selection of the saw is no more important than the care and fitting of it afterwards. And the setting of the teeth should especially be looked after. **This is important.** In probably nine cases out of ten where narrow band saws break, it is due to mistakes in the setting of the teeth. A band saw will do poor work and probably crack, no matter how good a saw it is, if—

There is not enough set to the teeth to clear the blade and prevent its binding in the cut.

The teeth are set so deep in the gullet as to strain the body of the blade.

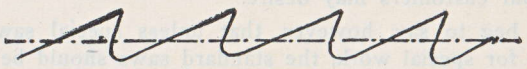
The teeth are so set as to force the sawdust down into the gullets and against the saw rather than to allow it freely to drag out.

The first is evident and needs no explanation. Give your saws a good wide set and keep it there.

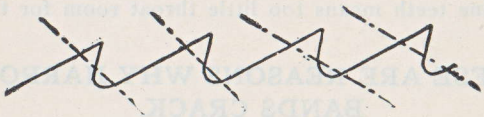
The second is almost as evident. The teeth can not be set from the bottom of the gullets without so wrenching them

apart that the gullets are checked and the body of the blade strained. The set should start from half way down the tooth and no deeper.

The third is best explained by the following illustrations:



This is the right way to set a saw—have the line of the set parallel with the back. It keeps the sawdust where it should be, toward the front of the teeth, which drag it out of the cut and drop it.

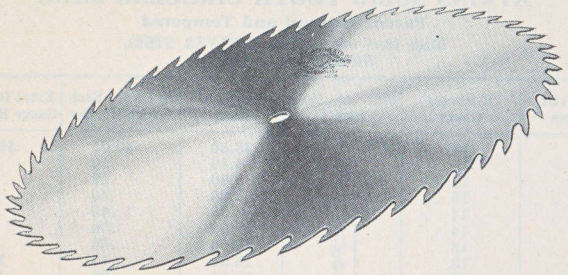


This is the wrong way to set a saw. The higher place at the back of the tooth forces the sawdust down where there is room for it and it is so packed down into the gullets and against the saw in the cut. Is it clear?

It is necessary besides only to say that the saws should always be kept sharp, and if bent or twisted by accident, should at once be hammered straight before put into further use.

And finally—**use judgment.**

Don't expect a ¼-inch saw to do the work a 1-inch should do, and don't use a 1-inch saw where a ¼-inch should be used.



ATKINS SAWS FOR THE MILL

All Genuine Atkins Mill Saws are made of Silver Steel.

Silver Steel is manufactured in enormous quantities under our own exclusive formula.

We thus secure the facilities of the largest steel plants in the world which insures a greater uniformity than could possibly be otherwise obtained.

To avoid variation, all Silver Steel is both chemically and physically analyzed in our laboratory and if not up to the standard is immediately rejected.

There is no temptation to use any blade, no matter how small, unless it measures up to the standard of Silver Steel.

The heat treatment is prescribed in the laboratory, based upon the analysis and the conditions under which the finished saw must operate.

In the tempering rooms the operatives carry out the directions of the laboratory. This work is done scientifically, through the use of exclusive machinery which reduces the hardening and tempering processes to an absolute certainty.

We have also invented and covered by patent, the most improved machinery for grinding purposes. By its use, we are enabled to finish Atkins Silver Steel Saws with great accuracy, giving any saw the required gauge, even when there is a variation of thickness wanted at different points in the blade.

The hammering or smithing process is in the hands of our most skilled workmen. In this department are found some of our oldest employees, many of whom have been in our constant employ from twenty to forty years.

Silver Steel files easily, but at the same time is exceedingly hard and tough. It is almost impossible to crack it, unless the saw is run at a disadvantage. It takes a perfect swage and Silver Steel Saws do not easily lose their teeth or points.

Any saw bearing the name of E. C. Atkins & Co., is guaranteed to give perfect satisfaction under even the most trying conditions if properly operated.

ATKINS SOLID TOOTH CIRCULAR SAWS

Patent Ground and Tempered

Made from our celebrated SILVER STEEL
Workmanship Unequalled

Diameter Inches	Thickness Gauge	Size of Hole Inches	Price Each	Extra for Each Gauge Heavier	Extra for Each Gauge Beveling
6	18	¾	$3.30	$0.07	$0.25
8	18	⅞	4.40	.10	.35
10	16	1	5.60	.20	.45
12	15	1	7.00	.30	.55
14	14	1⅛	8.50	.40	.65
16	14	1⅛	10.50	.50	.75
18	13	1¼	12.50	.60	.90
20	13	1 5/16	15.00	.75	1.05
22	12	1 5/16	17.50	.90	1.20
24	11	1⅜	20.50	1.05	1.35
26	11	1⅜	24.00	1.25	1.55
28	10	1½	28.00	1.50	1.75
30	10	1½	32.00	1.75	1.95
32	10	1⅝	36.50	2.00	2.15
34	9	1⅝	41.00	2.25	2.35
36	9	1⅝	47.00	2.60	2.55
38	9	1⅝	54.00	3.00	2.75
40	9	2	62.00	3.40	2.95
42	8	2	71.00	3.80	3.25
44	8	2	83.00	4.40	3.55
46	8	2	98.00	5.15	3.85
48	8	2	112.00	5.90	4.15
50	7	2	127.00	6.65	4.45
52	7	2	142.00	7.40	4.80
54	7	2	157.00	8.80	5.15
56	7	2	180.00	10.25	5.50
58	7	2	200.00	11.75	5.95
60	6	2	224.00	13.25	6.40
62	6	2	250.00	14.75	6.85
64	6	2	280.00	17.60	7.35
66	6	2	310.00	22.00	7.85
68	5	2	350.00	26.40	8.45
70	5	2	400.00	30.80	9.05
72	5	2	450.00	35.20	9.65
74	5	2	510.00	39.60	10.30
76	5	2	575.00	44.00	11.00
78	5	2	690.00	49.85	11.85
80	5	2	810.00	55.75	12.90
82	5	2	940.00	63.05	14.10
84	5	2	1,075.00	70.40	15.40

All saws under 6 inches in diameter take list of 6-inch saw.

All saws filed and set, ready for use.

All saws of odd diameters take list of next larger size.

No extra charge for saws one gauge thicker than list. No extra charge for saws one to three gauges thinner than list; when more than three gauges thinner, add 5% for each gauge.

Saws 48 inches and under, and 62 inches and over, in diameter, more than two gauges thinner than list not warranted. Saws 50 inches to 60 inches in diameter thinner than 10 gauge not warranted.

Saws 42 inches or less in diameter beveled one gauge without extra charge; 44 inches or larger beveled two gauges without extra charge. Saws hollow or concave ground add for each additional gauge hollow or concave ground double the list for beveling.

Saws for cutting Bone, Horn or Ivory, add 50% to the above list. When these saws are hollow or bevel ground the 50% advance is to apply only on the list of straight gauge saw, and not on extras for hollow or bevel grinding.

ATKINS BAND SAWS

SILVER STEEL

E. C. Atkins & Co. are the oldest manufacturers of band saws in the United States. This would mean nothing unless we had taken advantage of our increased experience and constantly improved the standard of our product. If "practice makes perfect," then we should know most about the manufacture of band saws. We use a formula for band saw steel which is giving far better results than the users or makers of band saws have ever anticipated. By actual test, (which is indisputable evidence), it is the finest saw steel that has ever been used in band saws.

An analysis is made in the laboratory, and the heat treatment prescribed, based upon the character of the work which the saw is to perform. Our knowledge in this regard has been acquired through our many years' experience in manufacturing band saws for all classes of work.

Our equipment for the tempering of band saws was invented by us and is exclusive By its use, we are able to impart an exactly uniform temper throughout the entire blade. There are no hard nor soft spots. Each part of the blade is of exactly the same degree of toughness.

This heat treatment renders Silver Steel exceedingly pliable, at the same time, firm and tenacious, with no liability of cracking or losing teeth or points, and having the quality of holding its cutting edge and tension under forced feed and most trying conditions.

Special machinery is used in grinding, whereby we are able to secure uniform gauge over the entire width of the blade. In this process we employ ponderous machinery that has been invented by ourselves, the use of which adds to the perfect operation of the finished blade.

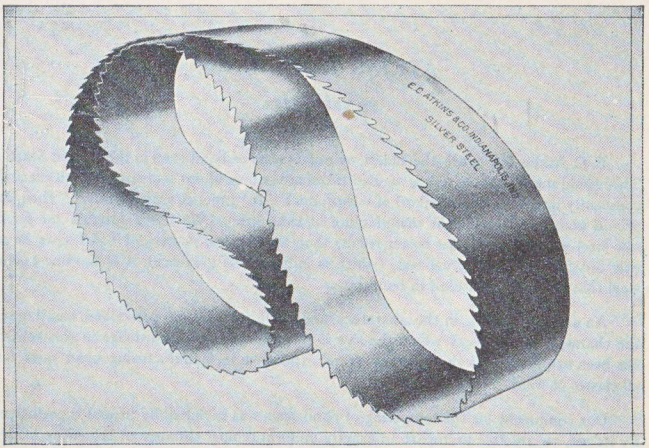
We feel justly proud of the manner in which our tensioning and levelling is done. In this department we employ none but the most skilled mechanics who are required to serve a number of years as apprentices before they are intrusted with the regular work.

So perfectly are Atkins Silver Steel Band Saws finished that they may be safely taken from the crate and merely inspected for shipping mishaps, and placed immediately upon the wheels, if we know your requirements. This is a feature that will be appreciated, as it means a great saving of both time and labor.

Every Atkins Silver Steel Saw is covered by an absolute guarantee against imperfections.

ATKINS WIDE BAND SAWS

SILVER STEEL



Width Inches	Usual Gauge	Weight per Foot	Price per Foot	Width Inches	Usual Gauge	Weight per Foot	Price per Foot
2	18 to 20	.28	$1.00	9	14 to 16	2.20	$4.30
2½	18 to 20	.35	1.20	10	14 to 16	2.81	4.80
3	18 to 20	.42	1.40	11	14 to 16	3.09	5.40
3½	18 to 20	.50	1.60	12	13 to 15	3.37	6.00
4	17 to 19	.57	2.00	13	13 to 15	3.65	7.20
4½	17 to 19	.64	2.20	14	13 to 15	4.50	8.40
5	17 to 19	.83	2.40	15	12 to 14	4.82	10.20
5½	17 to 19	.89	2.70	16	12 to 14	5.92	12.00
6	17 to 19	1.06	3.00	17	12 to 14	6.29	16.80
7	16 to 18	1.37	3.40	18	12 to 14	6.66	21.60
8	14 to 16	1.76	3.80				

Saws of odd widths, not listed, take price of next wider size listed.

For saws of heavier gauge than listed add 5 per cent to list for each gauge heavier.

No extra charge for saws one or two gauges thinner than list; when more than two gauges thinner add 5 per cent to list for each gauge.

Double Edge Band Saws. List price per foot, all widths, advance 10 per cent over list prices of Single Edge Saws as above.

Toothed Blanks. Same price as finished saws.

Band Saw Blanks. Bright, of any width, furnished to order but not warranted.

REVISED TABLE OF STRAINS

SUITED TO DIFFERENT WIDTHS AND GAUGES OF BAND SAW BLADES

Thickness		Pounds										
		Width, Inches										
Gauge	Inches	2½	3	3½	4	4½	5	6	7	8	10	12
21 and less	$\frac{18}{1000}$ to $\frac{22}{1000}$	800	900	1050	1200	1300	1400	1600	.....	.....	.....	.....
19 and 20	$\frac{26}{1000}$ to $\frac{28}{1000}$	1000	1200	1400	1500	1700	1900	2200	2500	.....	.....	.....
19 Tight and 18	$\frac{30}{1000}$ to $\frac{32}{1000}$	.....	.....	1700	1900	2100	2300	2600	3000	3300	.....	.....
17	$\frac{36}{1000}$	...	.....	.....	2300	2500	2700	3200	3600	4000	4800	.....
16	$\frac{40}{1000}$	.....	.....	.....	.....	.....	3000	3500	4000	4500	5200	.....
15	$\frac{44}{1000}$	.....	.....	.....	.....	.....	.....	4000	4500	5000	6000	7500
14	$\frac{48}{1000}$	.....	.....	.....	.....	.....	.....	.....	5500	6000	7500	9000

ATKINS BAND SAWS

NARROW

FOR RE-SAWING AND SCROLL SAWING

Price List, Filed and Set

Widh	Standard Gauge	Standard Teeth Points	Per Foot	Width	Standard Gauge	Standard Teeth Points	Per Foot
1/8	23	8	$0.13	7/8	21	4	$0.20
3/16	23	7	.13	1	20	3 1/2	.22
1/4	22	6	.13	1 1/8	20	3 1/2	.24
5/8	22	5 1/2	.14	1 1/4	20	3 1/2	.26
1/2	21	5	.15	1 3/8	20	3	.28
5/8	21	4 1/2	.16	1 1/2	20	3	.32
3/4	21	4	.18	1 3/4	20	3	.38

Above prices as given do not include joining, setting or filing.

Filing and setting 4 cents per foot extra.

Narrow band saws with beveled backs, advance list 50 per cent for first gauge and 10 per cent for each additional gauge.

For band saws with knife edge, add 10 cents per foot to list. We make a specialty of band saws in coils, any length desired.

BRAZING NARROW BAND SAWS

	Each Net		Each Net
1/4 to 1/2 inch	$0.50	1 to 1 1/4 inch	.70
5/8 to 7/8 inch	.60	1 3/8 to 1 3/4 inch	.80

SPECIAL BAND SAWS

Band saws for cutting bone, ivory, fibre, meat, brass and other soft metals; also "B" tooth metal band saws for cutting thin metals as above and thin iron and steel such as sheeting, etc., increase narrow band list 25 per cent.

APPROXIMATE WEIGHTS OF ENDLESS RUBBER BANDS FOR BAND SAW WHEELS

Diameter of Wheels Inches	Width Inches	Pounds	Ounces	Diameter of Wheels Inches	Width Inches	Pounds	Ounces	Diameter of Wheels Inches	Width Inches	Pounds	Ounces
22	1 1/2	1	4	26	2	1	14	36	2 1/4	2	11
24	1 1/2	1	6	28	2	2	0	38	2 1/4	2	13
26	1 1/2	1	8	30	2	2	2	40	2 1/4	2	15
28	1 1/2	1	10	32	2	2	4	42	2 1/4	3	1
30	1 1/2	1	12	34	2	2	6	30	2 1/2	2	8
24	1 3/4	1	9	36	2	2	8	32	2 1/2	2	10
26	1 3/4	1	11	38	2	2	10	34	2 1/2	2	12
28	1 3/4	1	13	40	2	2	12	36	2 1/2	2	14
30	1 3/4	1	15	30	2 1/4	2	5	38	2 1/2	3	0
32	1 3/4	2	1	32	2 1/4	2	7	40	2 1/2	3	2
34	1 3/4	2	3	34	2 1/4	2	9	42	2 1/2	3	4
36	1 3/4	2	5	....	....	....	....	....	....	..	....

Above table is based on bands 3/16 inch thick, which is the standard. For 1/4 inch thick add one-third. These weights are approximate and are subject to a slight variation.

Prices quoted on application.

REPAIRING

We make a specialty of all kinds of repair work. This branch of our business has assumed large proportions.

With improved machinery and appliances, expert workmen, careful attention to details and prompt return of work, we are prepared to guarantee the best service and perfect satisfaction.

We have established fully equipped Repair Departments at our main plant in Indianapolis, at our Canadian factory, Hamilton, Ont., also in connection with our branch houses at Memphis, Atlanta, New Orleans, Minneapolis, Portland, Seattle and Vancouver, B. C.

At each of these points, we have selected experts direct from our factory and have installed facilities for doing all classes of repair work to the best possible advantage. At Indianapolis and Memphis, we are prepared to resteel cylinder saws. Special attention is given to refitting segment veneer saws.

In forwarding saws for repair, you will facilitate matters by adhering closely to the following instructions.

(1) Mark *our* name and address plainly on the package.

(2) See that *your* name, postoffice address and shipping address, if different, is plainly marked on the outside of the package for identification.

(3) Advise us by mail of shipment, giving full instructions as to the work which you wish to have done.

Breakage in repairing is at owner's risk.

Full information as to the cost for repairing will be found on the next two following pages.

REPAIRING SOLID TOOTH CIRCULAR SAWS

Diameter Inches	Hammering Only	Gumming and Hammering	Cutting Down Retoothing and Hammering	Grinding First Gauge	Grinding Additional Gauges per Gauge	Setting and Sharpening	
						Cut-off Saws	Rip Saws
6	$0.45	$0.55	$0.75	$0.65	$0.35	$0.45	$0.35
8	.55	.75	1.00	.85	.55	.55	.40
10	.75	1.00	1.30	1.05	.75	.65	.50
12	.90	1.35	1.60	1.15	.85	.75	.60
14	1.05	1.60	1.90	1.35	1.00	.85	.70
16	1.20	1.80	2.20	1.60	1.15	.95	.80
18	1.45	2.10	2.55	1.95	1.30	1.05	.90
20	1.65	2.50	2.95	2.20	1.45	1.15	1.00
22	1.90	2.85	3.30	2.40	1.60	1.30	1.10
24	2.10	3.25	3.70	2.70	1.75	1.45	1.20
26	2.40	3.70	4.20	3.00	1.90	1.60	1.30
28	2.70	4.15	4.75	3.40	2.05	1.75	1.40
30	3.00	4.60	5.35	3.75	2.20	1.95	1.50
32	3.30	5.05	6.00	4.15	2.35	2.15	1.60
34	3.70	5.55	6.90	4.50	2.55	2.35	1.75
36	4.30	6.15	7.80	4.90	2.80	2.55	1.90
38	4.80	7.00	9.00	5.25	3.00	2.75	2.05
40	5.55	8.05	10.20	5.65	3.30	2.95	2.20
42	6.30	9.15	11.55	6.00	3.60	3.15	2.35
44	7.05	10.35	13.05	6.45	4.05	3.35	2.50
46	7.95	11.80	14.76	7.00	4.50	3.60	2.65
48	8.85	13.20	16.50	7.60	4.95	3.80	2.85
50	9.75	14.65	18.40	8.25	5.40	4.10	3.05
52	10.65	16.05	20.25	9.00	5.95	4.40	3.25
54	11.55	17.55	22.15	9.90	6.30	4.70	3.50
56	12.45	19.05	24.00	10.90	6.75	5.00	3.75
58	13.50	20.70	25.90	12.00	7.20	5.30	4.00
60	14.70	22.50	27.75	13.20	7.75	5.60	4.25
62	15.90	24.30	30.40	14.40	8.25	6.00	4.50
64	17.10	26.10	33.00	15.60	8.85	6.30	4.75
66	18.30	27.90	35.65	16.80	9.45	6.60	5.00
68	19.50	29.70	38.25	18.00	10.15	6.90	5.25
70	20.50	31.50	40.90	19.50	11.05	7.20	5.50
72	21.90	33.30	43.50	21.00	12.00	7.50	5.75
74	23.10	35.10	46.15	22.50	13.15	7.80	6.00

Saws smaller than 6 inch, take 6-inch price.

Saws of odd diameters take price of next larger size.

Converting solid tooth saws into inserted tooth saws, use half the price of the same sized finished solid tooth saw, plus $2.00 per tooth.

For converting solid tooth saws into Inserted Tooth Cut-off Saws, charge is $1.65 per tooth plus one-half the list price of a solid tooth saw of the same size. The price is based on the size the saw will finish after cutting down.

Repairing burned solid tooth saws, two-thirds the price of a new saw of the same diameter.

Repairing burned inserted tooth saws, two-thirds the price of a new solid tooth saw of the same diameter, plus 30c per socket; adding current price for any bits and shanks inserted. No extras furnished.

In sending us saws for repairs, mark our address in full upon the package; also give address of party sending it and what station and state shipped from, so that we can identify on arrival.

REPAIRING TAPER GROUND SHINGLE, HEADING AND RE-SAWS

Size ..... Inches	46-Inch and Under	48-Inch and Under
Hammered, per inch in diameter	$0.20	$0.25
Gummed and hammered, per inch in diameter	.28	.38
Re-toothed and hammered, per inch in diameter	.38	.50
Grinding first gauge, per inch in diameter	.08	.10
Grinding additional gauges, per inch in diameter	.05	.08

REPAIRING LONG SAWS, CROSS CUT AND BAND SAWS

MILL MULAY AND EQUAL WIDTH DRAG SAWS

Length ..... Feet	to 5	Over 5
Re-toothing and hammering ..... each	$2.25	$3.00
Hammering only ..... each	1.50	2.25

TAPER DRAG SAWS

Re-toothing, hammering and filing	each	$3.00
Hammering only	each	1.50
Setting and sharpening only	each	1.50
Re-toothing and hammering only	each	2.25

CROSS CUT SAWS

Hammering	each	$1.05
Gumming and hammering	each	1.50
Gumming, hammering, filing and setting	each	2.25
Re-toothing, hammering, filing and setting	each	3.00
Setting and sharpening only	each	1.05
Skimming and polishing	each	.75

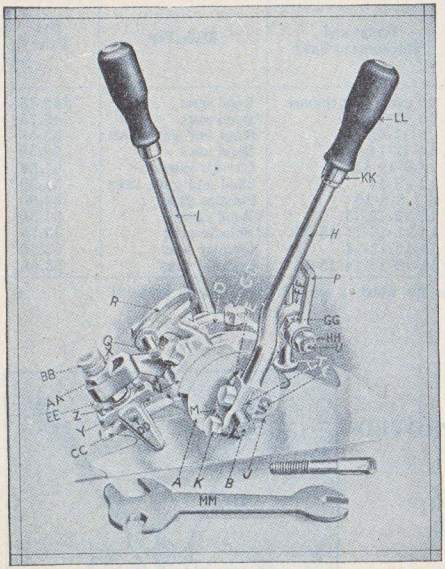
BAND SAW BLADES

Brazing wide blade for log mill	per inch in width	$0.75
Hammering	per inch in width	.07 ½
Gumming and toothing	per running foot	.12
Filing and swaging	per running foot	.12

NARROW BAND SAWS

Filing and setting	per foot	$0.08
Brazing ¼ inch to ½ inch	per braze	.90
Brazing ⅝ inch to ⅞ inch	per braze	1.13
Brazing 1 inch to 1¼ inch	per braze	1.35
Brazing 1⅜ inch to 1½ inch	per braze	1.80
Brazing 1¾ inch	per braze	2.05

ATKINS IDEAL SWAGE



In the Atkins Ideal Swage we have discovered the true principle for swaging saw teeth.

We claim for it the most scientific and perfect adjustment, the greatest simplicity of action combined with strength and durability.

Atkins Ideal Swage overcomes all difficulties that have been found in the operation of previous types of swages and produces perfect saw teeth with greatest precision and least effort.

The principle under which it is constructed places the working corner of the anvil at the exact center of operation. When the point of the tooth is placed at the corner of the anvil and the block is rolled forward or backward in the saddle to accommodate a slender or blunt tooth, the relation of the point of the tooth to the anvil always remains the same. In this manner, the relation of the die to the anvil is identical, therefore allowing an easy adjustment to the most inexperienced operators.

We confidently believe that Atkins Ideal Swage will eventually be used in all cases where the finest tools are a consideration.

All working parts are made sufficiently heavy and strong to withstand wear and hard usage and are reinforced where necessary. This insures the greatest life to the swage and the least cost for replacements.

It is made of the very finest materials throughout and all parts are carefully machined and fitted. It is heavily nickel-plated and buffed and no expense is considered that will add to its efficiency and durability.

Atkins Ideal Swages are made for use on all types of saws, including band re-saws, circular saws of all sizes and shapes of teeth, shingle saws, cylinder saws, etc. For detailed information in these particulars, see page 4.

Lists of parts and instructions for operating will be found on the following pages.

The use of Atkins Ideal Swage in connection with Pribnow Swage Shapers gives a combination which will enable even the most inexperienced operators to produce the most perfect teeth with least effort and expense.

ATKINS IDEAL SWAGES

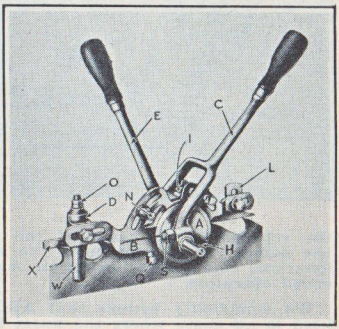
Ideal Swage No.	Size Die Inches	Depth of Tooth Not Less Than Inches	Gauge and Thickness of Saws	Made For	Net Price
0	5/16	Shallow	19 gauge and thinner	Band saws	$42.75
00	3/8	3/8	16-17-18-19	*Band saws	46.75
1	9/16	9/16	13-14-15-16	Band and gang saws	53.50
9	11/16	11/16	12-13-14-15	Band saws	53.50
2	5/8	5/8	8-9-10-11-12	Circular saws	61.50
5	5/8	5/8	12-13-14	Band and gang saws	53.50
3	3/4	3/4	6-7-8-9-10	Circular saws	64.00
6	3/4	3/4	11-12-13-14	†Band saws	61.50
4	7/16	7/16	14-15-16-17-18-19	‡Shingle saws	46.75
7	9/16	9/16	11-12-13-14	Circular saws	53.50
8	9/16	9/16	11-12-13-14-15-16	Cylinder saws	53.50

*Also applies to shingle saws for which a special front fork is provided.
†Heavy duty swaging.
‡Edgers and lath saws.

THE PRIBNOW IMPROVED SWAGE

Patented January 30, 1912
March 28, 1916
November 5, 1918

For Band, Gang, Circular and Cylinder Saws



With Oval Die and Eccentric Bushings

No.	Gauge	Size of Die	Weight	Net Price
16	8 to 13	7/8″	14½	$73.25
26	12 to 14	3/4″	10	66.50
17	13 to 15	5/8″	9	62.75
*27G	13 to 15	21/32″	9	62.75
18	14 to 16	39/64″	8	58.75
*18G	14 to 16	39/64″	8	58.75
19	16 to 18	17/32″	7	54.75
*19G	16 to 18	17/32″	7	54.75
20	17 to 20	31/64″	5	50.75
22	19 to 22	23/64″		48.00

With Solid Die and Bearings

No.	Gauge	Size of Die	Weight	Net Price
17S	12 to 14	23/32″	9	$59.25
*27GS	12 to 14	3/4″	9	59.25
18S	13 to 16	11/16″	8	55.25
*18GS	13 to 16	11/16″	8	55.25
19S	14 to 17	19/32″	7	51.25
*19GS	14 to 17	19/32″	7	51.25
20S	16 to 19	9/16″	5	47.25
22S	18 to 20	3/8″	4	45.00

*Gang Saw Swages are equipped with a short frame which permits swaging the top and bottom teeth closer to the tab. It also permits swaging short or damaged teeth to better advantage than with the regular Band Saw Swage.

This style of swage has proved to be the most convenient and perfect working swage of any in use, as well as the most economical in repairs.

THE BLOCK is made of the best machine steel, carbonized and hardened, which affords superior wear for the clamp screw hole as well as the bearing. The one-piece GUIDE FRAME, which carries the FRONT TOOTH REST and REAR TOOTH REST, also the FRONT and REAR DIE LEVER STOP, is so mounted on the BLOCK that the relative position of the DIE to the ANVIL is not changed when adjusting the ANVIL to the back of the tooth.

THE OVAL DIES are made with two or four working edges, but we recommend the style "V" Die, which has two working edges from end to end, as the most reliable, because it will put up the strongest corner without injury to the saw steel. Two or more size DIES will fit in the same swage by changing ECCENTRIC BUSHINGS: see list on pages 13 and 14. ECCENTRIC BUSHINGS are also furnished in a medium or deep Eccentric to fit the same Die. This gives the swage a wide range of adjustment to take care of any swage problems that are likely to come up.

THE ANVIL is placed in the BLOCK at such an angle that the working corner always points toward the center of the DIE, so that the relative adjustment of the DIE and ANVIL remain the same, whether a large Die or a small Die is used.

THE FORKED DIE LEVER carries a pair of ECCENTRIC BUSHINGS (one on each side of the Anvil), in which the OVAL DIE is mounted. The BUSHINGS turn with the DIE and, coming close to the ANVIL, provides a strong bearing for the DIE. By loosening the GRIP-BOLTS in the FORKED LEVER the DIE can be pushed out for inspection or moved endwise for a new wearing surface without disturbing any of the other adjustments.

THE ECCENTRIC DIE BUSHINGS have a flat place on the top side near the outer end, which engages with the flat place on the GRIP-BOLTS. The BUSHNIGS are split on the outer end and, by tightening the GRIP-BOLTS, the BUSHINGS and DIE are securely locked in the proper position.

THE GRIP-BOLTS are made in a 15, 20 or 25 degree taper as a rule; all swages are adjusted so that the 20 degree taper will stop the DIE LEVER in the most convenient position. In case it is desirable to advance the DIE, use a 15 degree GRIP-BOLT; to retard the DIE, use a 25 degree GRIP-BOLT. The degree of taper is marked on the end of the GRIP-BOLT. The DIE LEVER has a large range of adjustment to determine the most suitable position of the GRIP-BOLTS. This being once determined there is no danger of the DIE getting out of place.

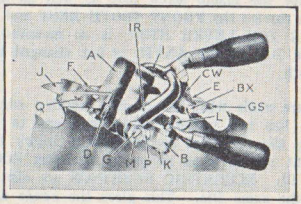
In ordering swages we advise sending a sketch of the tooth that the swage is to be used on, also state gauge of saws, width of swage required and the kind of timber to be sawed. This information will assist us in selecting size of DIE and ANVIL best suited for your work.

If you are interested in Cross-Cut Saws, and would like to have a copy of our new book which illustrat e and describes our popular patterns, we will send it on request. This book also contains a treatise on filing and setting Cross-Cut and Drag Saws to obtain good results

THE PRIBNOW IMPROVED SWAGE SHAPER

Patented September 17, 1918

For Band, Gang, Circular and Cylinder Saws



Single Lever Style

No.	Gauge	Weight	Net Price
31	5 to 10	10	$50.75
32GH	10 to 13	7	48.00
32G	14 to 17	7	48.00
32CY	11 to 18	7	48.00
33	18 to 22	5	42.75

Double Lever Style

No.	Gauge	Weight	Net Price
31D	5 to 10	11	$56.00
32D	11 to 14	8	53.25
33D	15 to 22	5½	46.75

Single Lever Style With Bench Bracket

32CB	10 to 17	10	$53.25

Double Lever Style With Bench Bracket

31CBB	5 to 10	15	$61.25
32GHBD	10 to 13	11	58.75

These shapers are equipped with a SINGLE LEVER or with a DOUBLE (split) LEVER. Several important improvements have been made (not shown in the cut) among which are the following:

THE TOOTH REST BAR is slotted near the back end, which permits adjusting the TOOTH GAUGE for more or less swage in relation to the SHAPING JAWS.

A side action (by means of a flat spring) permits the TOOTH GAUGE to center in relation to the SHAPING JAWS, reducing the liability of breaking the TOOTH GAUGE.

THE SINGLE LEVER style can be operated from either side by changing the CLAMPING SCREWS from one side to the other. This makes it convenient to change from a right to a left hand saw, besides getting double the wear out of the same BASE and CLAMPING SCREWS.

THE DOUBLE LEVER style operates both CLAMPING SCREWS at the same time. Both JAWS are moved up equally against the saw tooth, aligning the shaper centrally to the TOOTH GAUGE. The number 32D shaper has a longer TOOTH REST BAR and special GUIDES (Ft) near the back end to steady the shaper on saws of wide spacing.

THE TOOTH GAUGE is double ended and is held in place by TAPER PINS. Both ends are usually fitted for saws of the same gauge, but will be furnished for saws of different gauges when so specified.

THE SHAPING JAWS are long, the full length of the shaper; they have four wearing points on each end; they come in contact with the tooth at such an angle that only one bevel is required, which is much easier to keep up than the double bevel on the OLD STYLE SHAPER.

The LONG SHAPING JAWS answer a threefold purpose.

First—Both ends are hardened, making eight wearing points before regrinding is required.

Second—The lower end of the JAW can be set close up to the saw and acts as a guide to steady the shaper on the saw as it moves along.

Third—It provides a good steady grip well down on the sides of the saw while the tooth is being shaped.

The JAWS are independently adjustable; this is a valuable feature, without which a Shaper is not complete.

ATKINS SAW MAKERS' TOOLS

SHINGLE SAW SET

For heading, shingle or small saws. Made of drop forged tool steel. Weight, 5 ounces each.

Price.....per dozen $15.60

CIRCULAR AND MILL SAW SETS

Made to suit saws of different sizes.

Large, for circular saws, double handle, each.....$3.90

Small, for band saws, single handle, each..... 2.60

Weight, large, 1 lb., 10 ounces each.

Weight, small, 10 ounces each.

BAR SWAGES

No.	No. of Sides	Dimensions Inches	Wt. Lbs.	Price Each
1	6 or 8	11x1 x$1\frac{1}{2}$	$\frac{13}{16}$	$ 7.00
2	6 or 8	11x$1\frac{1}{4}$x$\frac{5}{8}$	$1\frac{11}{16}$	8.40
3	6 or 8	11x$1\frac{1}{2}$x$\frac{3}{4}$	$2\frac{9}{16}$	9.70
4	6 or 8	11x$1\frac{3}{4}$x$\frac{7}{8}$	$3\frac{1}{2}$	11.00

HAMMERS FOR BAR SWAGES

Size Inches	Weight Lbs.	Price Each
$\frac{3}{4}$	$\frac{1}{2}$	$2.75
$\frac{7}{8}$	$\frac{11}{16}$	3.30
1	$\frac{13}{16}$	3.80

Every sawyer or filer should have one of these swages and hammers for drawing out short teeth, or swaging saws, before using the regular swage or upset.

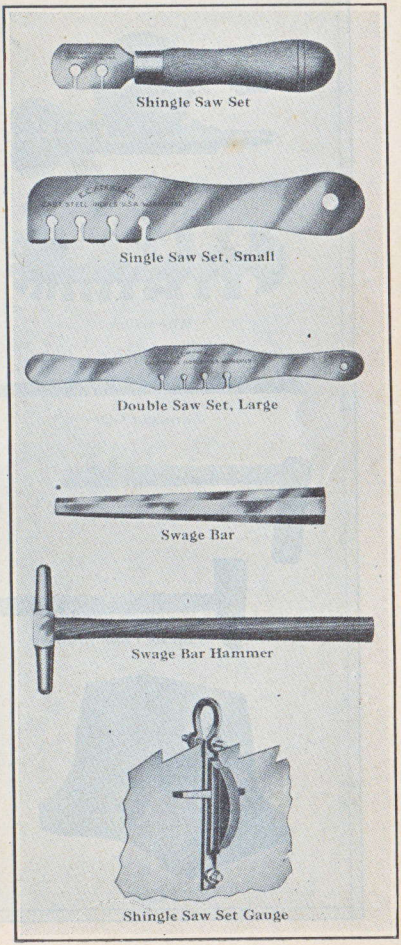
ATKINS SHINGLE SAW SET GAUGE

For cylinder, shingle and heading saws.

An accurate tool that will produce good results.

Price, nickel-plated.....each $1.00

Weight, each.....ounces $4\frac{1}{2}$



Shingle Saw Set

Single Saw Set, Small

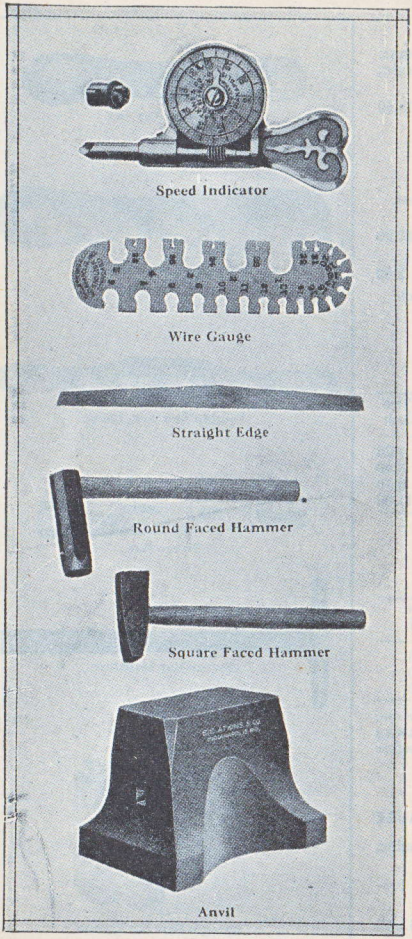
Double Saw Set, Large

Swage Bar

Swage Bar Hammer

Shingle Saw Set Gauge

ATKINS SAW MAKERS' TOOLS



IMPROVED SPEED INDICATORS

Will give the speed of any machine or shaft when in motion, correctly. Weight per dozen, 2 pounds.

Sent by mail, prepaid, with cap, for $1.00 each.

STANDARD WIRE GAUGES

Oblong gauges Nos. 1 to 26 .....each $2.00

Round wire gauges.....
.....each 1.65

STRAIGHT EDGE

Price .....per foot $2.00

Over 5 feet in length, special prices quoted on application.

TENSION GAUGE

Made to order. Prices on application.

BACK GAUGE WITH DOUBLE EDGE

Made to order. Prices on application.

ROUND FACED HAMMER

Price .....per pound $2.00

Furnished any weight desired.

SQUARE FACED HAMMER

Price .....per pound $2.00

Furnished any weight desired.

ANVILS

Steel Faced

Anvils weighing less than 180 pounds....
.....per pound 15

Anvils weighing 180 pounds or over.....
.....per pound 18

We keep in stock anvils 10x6 face, 86, 110, 145 pounds; 12x6, 250 pounds.

ATKINS UPSET SWAGES

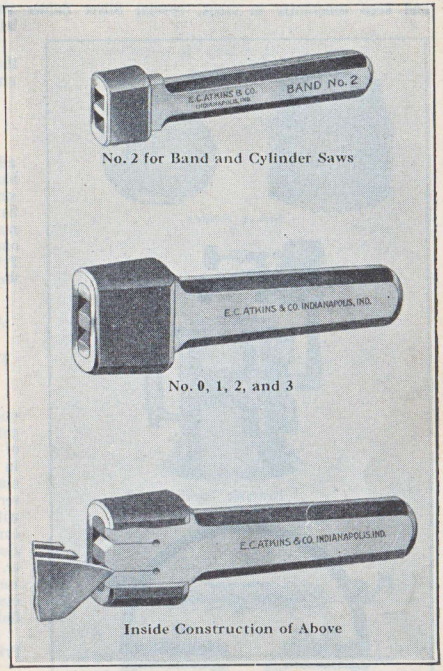
Atkins Upset Swages may be successfully used on all kinds of saws. The material in the shank is of the very highest quality tool steel. The bands are made from a high grade soft steel of sufficient tensile strength to stand the strain without cracking or expanding.

Order by number, specifying type of saw and gauge on which swage is to be used.

ATKINS No. 2

For Band and Cylinder Saws

Price.....each $3.00
Weight, each, 6½ ounces.



No. 2 for Band and Cylinder Saws

No. 0, 1, 2, and 3

Inside Construction of Above

ATKINS UPSET

For Circular and Other Saws

No. O, for large circular saws, from 5 to 10 gauge.
Price .....each $4.00
Weight, each, 1½ pounds.

No. 1, for large circular saws, from 8 to 12 gauge.
Price .....each 3.70
Weight, each, 1⅛ pounds.

No. 2, for small circular and mill saws of thinner gauge.
Price .....each 3.00
Weight, each, 7-16 pound.

No. 3, for small circular saws. Price.....each 2.35
Weight, each, 2½ ounces.

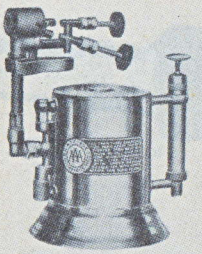
ATKINS BRAZING TOOLS

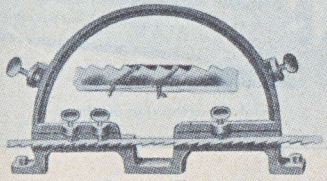
SILVER SOLDER

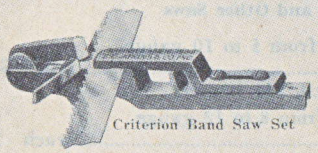
The successful brazing of band saws largely depends on the solder used. We use, and keep constantly in stock, special Silver Solder that has proved to be the best adapted for brazing tempered steel.

We will furnish Silver Solder at the lowest market price, predicated on the price of silver.

Silver Solder


Brazing Torch


Brazing Clamps


Criterion Band Saw Set


Brazing Tongs

BRAZING TORCH

The Atkins Brazing Torch is admirably adapted for brazing band saws, as the flame is a small, concentrated, pointed flame of intense heat which makes the braze in a few seconds.

Price .....each $4.50
Weight, each.....pounds 2

ATKINS BRAZING AND FILING CLAMPS

For Brazing Narrow Band Saws

Bevel the ends of saw about one-half inch, and bind firmly together with two or three strands of very fine wire. Fasten the saw in position with the set screws in clamp; place a small piece of silver solder on the lap, and cover with powdered borax. The braze can then be made either with our alcohol lamp with automatic blower, or with the common brazing tongs. Use the half circle of clamp when filing the bevel and in finishing up braze.

Weight, 13 pounds, each.
Price ..... each $5.90

ATKINS CRITERION BAND SAW SETS

For narrow bands, carpenters' rip saws and saws with similar teeth. Price.....per dozen $13.35
Weight, one-half dozen, 7⅛ pounds.

BRAZING TONGS AND CLAMPS FOR BAND SAWS

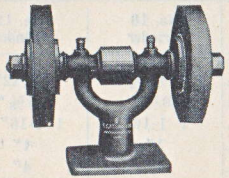
Large

To braze saws from 2 to 6 inch, with clamp, weight, 11¼ pounds each. Price.....each $10.00

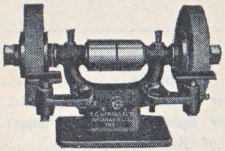
Small

For bands 1¼ inch and smaller, no clamp, weight, 4 13/16 pounds each. Price....each $4.00

ATKINS GRINDERS



No. 6 Grinder



No. 6-L Grinder

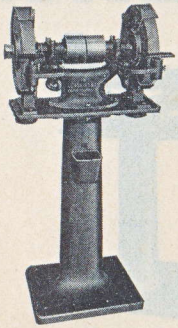
LIST PRICES

	No. 6	No. 6-L
Head only	$ 8.00	$10.00
Rests only	2.00	2.00
Wheel Guards only	4.00	4.00
Column only	18.00	20.00
Countershaft only	15.00	15.00

In ordering state if Rests and Wheel Guards are wanted, and order Column and Countershaft if desired; otherwise Head only will be shipped.

Grinding Wheels are not included but will be furnished in any size suitable for work required at lowest market prices. Give the diameter and thickness and the class of grinding for which they are to be used.

ATKINS GRINDERS



No. 10 Grinder

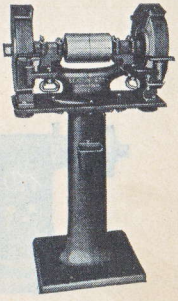
Made with tight and loose pulleys unless specially ordered with tight pulley only. Babbitted wick oiling bearings. Adjustable tool rests. Legal size flanges. Carbon steel spindle.

No. 10 GRINDER

With or without Guards. With or without Column. Will carry two Wheels 10″ x 1½″ or smaller.

No. 12 GRINDER

With or without Guards. With or without Column. Will carry two Wheels 12″ x 2″ or smaller.



No. 12 Grinder

ATKINS GRINDERS

SPECIFICATIONS

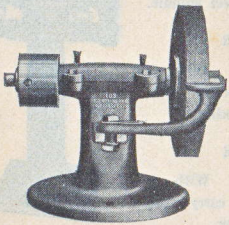
	No. 10 Grinder	No. 12 Grinder
Wheel Size	10″x1½″	12″x2″
Length of Spindle	20½″	25⅝″
Diameter Spindle in Bearing	1 1-16″	1 1-16″
Diameter Spindle between Flanges	1″	1″
Length of Bearing	3″	4″
Size of Pulleys	3½″x2½″	4¼″x3⅜″
Distance between Wheels	14″	17¾″
Diameter of Flanges	4½″	5⅞″
Height to Center of Spindle	7½″	8″
Net Weight of Head	46 lbs.	65 lbs.
Size Base of Column	14″x16″	15″x18″

LIST PRICES

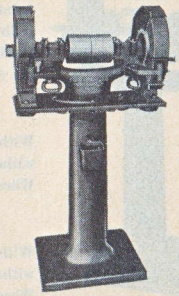
	No. 10	No. 12
Head only	$30.00	$40.00
Wheel Guards only	8.00	11.00
Column only	35.00	40.00
Countershaft only	25.00	30.00

These Grinders are regularly furnished with adjustable tool rests, but Wheel Guards, Column and Countershaft are extra and should be specified if wanted.

Grinding Wheels are not included, but will be furnished in any size suitable for work required at lowest market prices. Give the diameter and thickness and the class of grinding for which they are to be used.



No. 10-S Grinder



No. 14 Grinder

ATKINS GRINDERS

The No. 14 Grinder is made with tight and loose pulleys unless specially ordered with tight pulley only; the 10-S with tight pulley only. Babbitted wick oiling bearings. Adjustable tool rests. Legal size flanges. Carbon steel spindle.

No. 10-S GRINDER

Single end only. With or without guard. With or without column. Will carry one wheel, 10" x 1½" or smaller.

No. 14 GRINDER

With or without guards. With or without column. Will carry two wheels, 14"x2½" or smaller.

SPECIFICATIONS

	No. 10-S Grinder	No. 14 Grinder
Wheel Size	10"x1½"	14"x2½"
Length of Spindle	14"	31"
Diameter of Spindle in Bearing	⅞"	1 5-16"
Diameter of Spindle between Flanges	¾"	1¼"
Length of Bearings	7"	5"
Size of Pulleys	3½"x2½"	4⅞"x4¼"
Distance between Wheels		22"
Diameter of Flanges	3⅜"	6⅞"
Height to Center of Spindle	8"	8½"
Net Weight of Head	29 lbs.	104 lbs.
Size of Base of Column	12"x14"	18"x22"

LIST PRICES

	No. 10-S	No. 14
Head only	$20.00	$55.00
Wheel Guards only	6.00	15.00
Column only	35.00	55.00
Countershaft only	25.00	30.00

These grinders are regularly furnished with adjustable tool rests, but wheel guards, column and countershaft are extra and should be specified if wanted.

Grinding wheels are not included, but will be furnished in any size suitable for work required at lowest market prices. Give the diameter and thickness and the class of grinding for which they are to be used.

COUNTERSHAFTS FOR 10-S AND No. 14 GRINDERS

	No. 1	No. 3	No. 4
Size of Drive Pulley	8"x2"	10"x3¼"	12"x4"
Size of Tight and Loose Pulleys	4"x2"	5"x3"	5"x3"
Length of Shaft	18"	24"	26"
Diameter of Shaft	⅞"	1 1-16"	1 1-16"
Drop of Hangers	6"	8"	8"
Length of Bearings	3¼"	4"	4"
For Use with Machine Numbers	6 and 6-L	10 and 10-S	12 and 14
List Prices	$15.00	$25.00	$30.00

ATKINS GRINDING WHEELS

Abrasives Used in Manufacturing
Atkins Grinding Weeels

ACROLITE for Steel
FERROLITE for Cast Iron

Atkins Grinding Wheels are designated as Acrolite and Ferrolite. Both are electric furnace products but of different chemical and physical characteristics. Each is adapted to a certain class of grinding operations.

ACROLITE

Acrolite is made in an electric furnace from mineral bauxite, producing aluminum oxide. This is a very hard, sharp, and tough abrasive, making it especially suitable for grinding all kinds of carbon and high speed steel products, such as saws, knives, wood-working tools, milling cutters, reamers, shears, shear blades, planer tools, wrought iron, axles, crankshafts, lathe tools, etc. Wheels made of this abrasive are adapted for grinding everything made of steel. That is why we say "Acrolite for Steel."

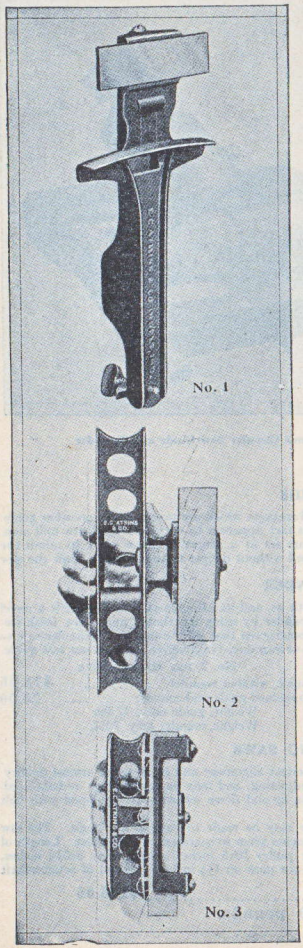
FERROLITE

Ferrolite is chemically known as Carbide of Silicon. It is produced by making a mixture of coke, salt, sawdust, and sand, which are fused in an electric furnace and then crushed and graded for different purposes. Wheels made of Ferrolite are especially adapted for grinding cast iron, chilled iron, stove castings, malleable iron, brass, copper, aluminum, and bronze and other materials, such as pearl, marble, cement, concrete, porcelain, rubber, etc. The most common and universal use of these wheels is for grinding cast iron, hence our recommendation "Ferrolite for Cast Iron."

"A Grinding Wheel for Every Purpose"

Write for book giving all sizes and detailed information.

ATKINS SIDE FILES



ADJUSTABLE No. 1

The No. 1 file is the simplest tool ever invented for the purpose. The width of the set or swaged tooth is regulated by a single set screw. The clamp for holding the file is adjustable, permitting the use of any kind of file, if one of our files made especially for them cannot be easily obtained. This tool is especially adapted for circular saws.

ADJUSTABLE No. 2

The No 2 file is adjustable for holding any kind of file, similar to the No. 1, and by its shape is peculiarly adapted for long saws, such as band and gang saws. It can be used on blades down to two inches in width, and as wide as desired. No one who runs such saws should be without this tool. It is also preferred by some on circular saws.

No. 3 FOR BAND AND GANG SAWS

The No. 3 file is adjustable for holding 8 inch and 9 inch files, and so arranged that the file can be tilted to any desired angle. A gauge passes over the points of the teeth, bringing the file in proper position for doing the work. The No. 3 file is for all long saws. It can be used on any width of blade.

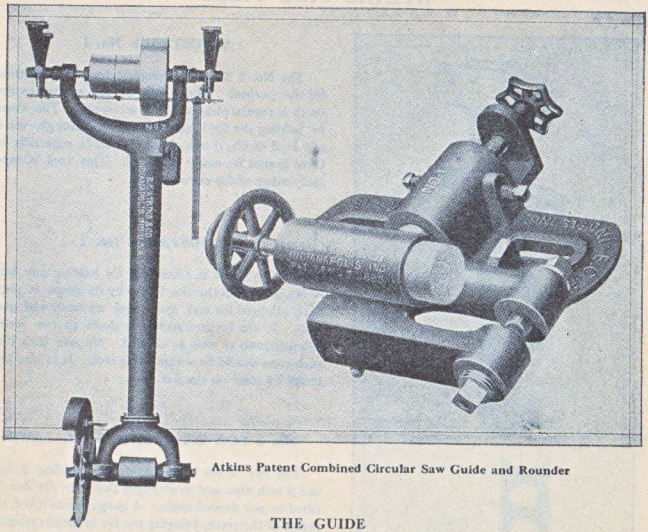
Side files are used for the purpose of regulating saw teeth after they have been set. It is impossible to set or upset a saw so that some of the teeth will not extend or be bent over a little more than others, and thus make rough lumber. By the use of these instruments all the teeth are made even; and a saw thus regulated will run twice as long without sharpening, and do much better work.

The reputation of our adjustable side files is fully established, being acknowledged as most convenient and accurate tools. No. 2 is entirely novel in its construction and adaptability. It is easily operated, and insures accurate work.

No. 1, for circular saws..... each	$1.35
No. 2, for band, gang and circular saws..each	1.35
No. 3, for band saws..... each	1.35
Extra files for Nos. 1 and 2.....per dozen	4.00
Extra files for No. 3 .....per dozen	4.80

Weight, No. 1, 2 pounds each.
Weight, No. 2, 1⅝ pounds each.
Weight, No. 3, 1⅜ pounds each.

ATKINS SPECIALTIES



Atkins Patent Combined Circular Saw Guide and Rounder

THE GUIDE

This invention, used simply as a saw guide, has advantages which are possessed by no other guide A glance at the accompanying engraving will make this fact apparent to every practical saw-mill man. Guide is adjustable and reversible. If the guide-pins are set at a proper distance apart to admit the rotation of the saw, the adjustment is easily accomplished without danger to the operator while the saw is in motion.

THE ROUNDER

The "Rounder" or "Jointer" is entirely original with us, and its attachment to a saw guide a novel and valuable feature When not in use detach the rounder by using the thumb nut. Saw teeth frequently require jointing, and no device has ever been constructed that will "round up" a circular saw so perfectly, effectually and conveniently as that which we have introduced in combination with our saw guide

No. 1, FOR ORDINARY MILLS		No. 2, FOR HEAVY WORK	
Guide, without rounder	$13.35	Guide, without rounder	$16.65
Combined guide and rounder	16.65	Combined guide and rounder	20.00
Weight, guide only, 32 lbs.		Weight, guide only, 47 lbs	
Weight, rounder only, 6½ lbs		Weight, rounder only 7 lbs.	

ATKINS SWING SAWS

The frame hangs on hangers, doing away with imperfect alignment and insuring the utmost rigidity The head is detachable, permitting of great ease in adjusting, and may be removed or re-babbitted. Countershaft and hangers of 1 7/16 steel shafting, have an up and down adjustment, equipped with belt shifter.

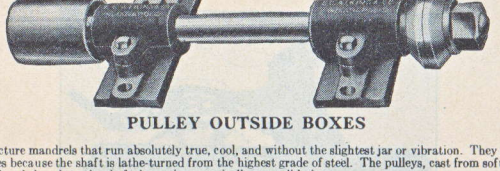
Through the use of adjustable counter weight, saw may be made to hang at any angle. The saw guard will accommodate saws up to 20 inches, or to 24 inches when so specified, at extra cost Length of frame 6 feet, tight and loose pulley 8x5 inches, drive pulley 16x5 inches, arbor pulley 5x5½ inches, size of arbor in bearing 1 7/16 inches, size of arbor where saw goes on 1⅛ inches Speed of countershaft 450 revolutions per minute, weight 400 pounds.

Price, No. 7, with saw..... $166.65

Weight, 550 pounds.

ATKINS CIRCULAR SAW MANDRELS

CAST STEEL, SELF-OILING BOXES



PULLEY OUTSIDE BOXES

We manufacture mandrels that run absolutely true, cool, and without the slightest jar or vibration. They cost more than some other makes because the shaft is lathe-turned from the highest grade of steel. The pulleys, cast from soft gray iron, are also lathe-turned and shrunk to the shaft, becoming practically one solid piece.

No.	Extreme Length Inches	Diameter of Arbor Inches	Diameter of Pulley Inches	Face of Pulley Inches	Diameter of Collars Inches	Size of Hole in Saw Inches	Size of Saw Inches	Weight Lbs.	Price Each
1	16½	1 1/16	3	3	3	1	10 to 12	18½	$ 8.00
2	19	1 1/16	3	3½	3	1	10 to 12	20	8.50
3	21½	1 1/16	3	4	3½	1 5/8	14 to 16	27½	9.50
4	24	1 1/16	3½	4½	3½	1 5/8	14 to 16	30½	10.75
5	26	1 1/16	4	5	4	1¼	18	35½	12.50
6	28	1 1/16	4½	5½	4	1¼	18	40	14.00
6½	30½	1 1/16	5	6	4½	1 1/16	20 to 22	47½	16.00
7	30½	1 1/16	5	6	4½	1 3/8	24 to 26	47½	16.00
8	33½	1 1/16	5½	6½	4½	1 3/8	24 to 26	51½	18.00
9	37	1 1/16	6	7	4½	1½	28 to 30	62	22.50
10	41	1 1/16	7	8	5	1 5/8	32 to 38	86	28.00
11	44½	1 1/16	8	10	5	1 5/8	32 to 38	133	33.50
12	48	1 1/16	10	10	5	1 5/8	32 to 38	157	40.00
13	54	2 1/16	12	10	5	2	40 and over		50.00

Mandrels with pulley outside are made with pulley on right-hand side, with left-hand thread, unless otherwise ordered.

PULLEY INSIDE BOXES, SINGLE END

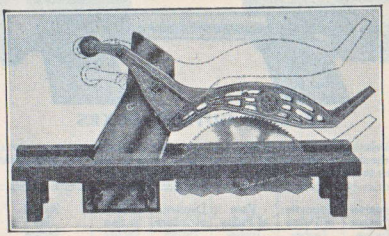
No.	Extreme Length Inches	Diameter of Arbor Inches	Diameter of Pulley Inches	Face of Pulley Inches	Diameter of Collars Inches	Size of Hole in Saw Inches	Size of Saw Inches	Weight Lbs.	Price Each
1	14	1 1/16	3	3	3	1	10 to 12	17½	$ 7.50
2	16	1 1/16	3	3½	3	1	10 to 12	19	8.00
3	18	1 1/16	3	4	3½	1 5/8	14 to 16	27	9.00
4	20	1 1/16	3½	4½	3½	1 3/8	14 to 16	29	10.00
5	22	1 1/16	4	5	4	1¼	18	34	11.50
6	24	1 1/16	4½	5½	4	1¼	18	38½	13.00
6½	26	1 1/16	5	6	4½	1 1/16	20 to 22	38½	14.50
7	26	1 1/16	5	6	4½	1 3/8	24 to 26	47	14.50
8	28	1 1/16	5½	6½	4½	1 3/8	24 to 26	49	16.00
9	32	1 1/16	6	7	4½	1½	28 to 30	60	20.00
10	36	1 1/16	7	8	5	1 5/8	32 to 38	77	26.00

PULLEY INSIDE BOXES, DOUBLE END

No.	Extreme Length Inches	Distance from Saw to Saw on Double Ended Mandrels Inches	Distance from Out to Out of Boxes on Double Ended Mandrels Inches	Diam. of Arbor Inches	Diam. of Pulley Inches	Face of Pulley Inches	Diam. of Collars Inches	Size of Hole in Saw Inches	Size of Saw Inches	Weight Lbs.	Price Each
1	20	16	13	1 1/16	3	3	3	1	10 to 12	22	$12.00
2	22½	18	15	1 1/16	3	3½	3	1	10 to 12	23½	13.00
3	24	20	16	1 1/16	3	4	3½	1 5/8	14 to 16	31	14.50
4	26	22	18	1 1/16	3½	4½	3½	1 5/8	14 to 16	34½	16.00
5	28	23¼	19¾	1 1/16	4	5	4	1¼	18	41	18.00
6	30	25¼	21¾	1 1/16	4½	5½	4	1¼	18	45½	20.00
6½	32	26¾	22¾	1 1/16	5	6	4½	1 1/16	20 to 22	45½	22.00
7	32	26¾	22¾	1 1/16	5	6	4½	1 3/8	24 to 26	49	22.00
8	34	28¾	25½	1 1/16	5½	6½	4½	1 3/8	24 to 26	59	24.00
9	38	32½	27¾	1 1/16	6	7	4½	1½	28 to 30	65	29.00
10	42	36	30½	1 1/16	7	8	5	1 5/8	32 to 38	75	35.00

Prices do not include saws.

ATKINS "AAA" SAW GUARD



The action of Atkins "AAA" Saw Guard will be so readily seen from the above illustration that a further description is perhaps unnecessary.

The Guard itself is made of aluminum. It has an up and down motion in the slot on front guide or splitter. This gives the guard a capacity for any thickness of lumber up to three inches. There is also a tilting movement on the loose bolt with which the guard is fastened to the splitter. This causes the guard to entirely encompass the saw, as it automatically drops forward when the lumber is fed under the opposite end and when the end of the board is reached, it drops down at the rear, until both ends touch the table. See dotted lines above.

A swinging dog, attached to the back of the splitter prevents the lumber from kicking backward.

It is the only guard that will take all thicknesses of lumber without special adjustment and that at the same time entirely protects the user, making it impossible to come in contact with the saw blade during the entire process of sawing.

For the ordinary wood table a malleable holder is screwed to the bottom of the table and the splitter is attached to same with thumb screws. Where table has an underneath rib, a special attachment is used. (See small cut above.) This attachment is adjustable either horizontally or vertically and will fit any style of saw table.

		Wood Table	Iron Table
No. 3.	For Saws 12 inches in diameter and under .....each,	$16.00	$21.35
No. 4.	For Saws 16 inches in diameter and under .....each,	18.65	26.65
	Weight.....lbs. each.		

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